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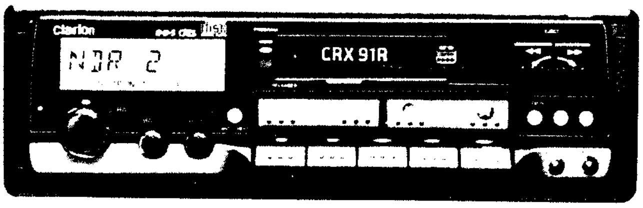
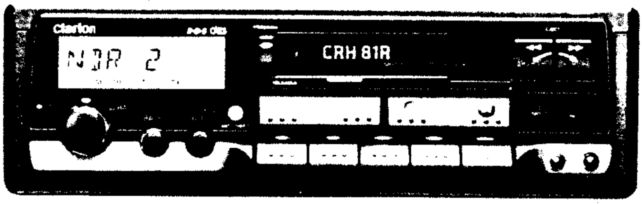
clarion Service Manual

Published by Service Administration Section



CRX91R



CRH81R

RDS/FM·MPX/MW/LW RADIO CASSETTE COMBINATION WITH CD CHANGER CONTROL

Model CRX91R
(PE-9438A)

Model CRH81R
(PE-9439A)

■SPECIFICATIONS:

Radio section

Circuit system:	Superheterodyne
Tuning system:	Electronic tuning
Receiving frequency:	LW 153kHz to 281kHz MW 531kHz to 1,602kHz UKW(FM) 87.5MHz to 108MHz
Intermediate frequency:	LW, MW 450kHz UKW(FM) 10.7MHz

Tape section

Reproduction system:	Auto reversing 4 track, 2 channel stereo cassette tape playback (Monaural also capable)
Tape speed:	4.76cm/sec. (1-7/8 ips)

Composite

Load impedance:	4Ω×4
Power output:	15W×4
Power supply voltage:	DC 14.0V(10.8V to 15.6V) Negative ground
Power consumption:	Less than 10A (at max. output)
Dimensions:	Width 178mm Height 50mm Depth 160mm
Weight:	1.7kg

- Dolby noise reduction System manufactured under license from Dolby Laboratories Licensing Corporation
- "Dolby" and the double-D symbol ▯▯ are trademarks of Dolby Laboratories Licensing Corporation

■COMPONENTS:

- **CRX91R (PE-9438A-A)**
- **CRH81R (PE-9439A-A)**

Main unit		1
Guide label (wire connection)	285-1438-00 (CRX91R)	1
Guide label (wire connection)	285-1439-00 (CRH81R)	1
Mounting bracket	300-6954-00	1
Mounting bracket	300-9035-01	1
Extension lead	854-1877-00	1
Parts bag	921-8601-00	1
{ Removal tool	341-1387-01	1
Parts bag	921-8735-00	1
Spacer	345-3653-01	1
Tap screw	700-5016-80	1
Screw	716-0726-01	1
Nut	722-0314-00	1
Plate nut	725-0216-00	1
Parts bag	921-8803-00	1
Sticker	291-0051-00	2
DCP case	346-0071-00	1

■FEATURES:

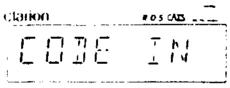
- ■ RDS (Radio Data System): PI (Programme Identification), AF (Alternative Frequency), TP (Traffic Programme Identification), TA (Traffic Announcement), PS (Programme Service name), REG (Regional Selection)
- ■ One-touch Memory (10 FM, 5 MW/LW)
- ■ Tuning Modes: Manual Tuning and Station Seek
- ■ Preset Scan (PS) & Auto Store (AS) on FM/MW/LW
- ■ Key-Off Pinch Roller Release
- ■ Dual Azimuth Adjustment Mechanism
- ■ 70 μsec Tape Equalization Selector (MTL)
- ■ APC (Automatic Programme Control)
- ■ Dolby B Noise Reduction
- ■ Loudness Switch
- ■ Maximum Power Output: 15 W × 4
- ■ 4-Channel Line-Out (CRX91R)
- ■ CD Changer Control (CRX91R)
- ■ CD Input Mini-jack (CRH81R)
- ■ Detachable Control Panel

■CATS Ⅲ (Computer Anti-Theft System Ⅲ):

Operation

[1] Entering the CATS Code

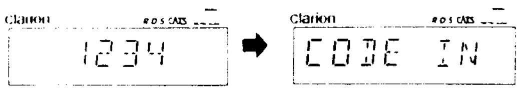
1. Turn the power off by turning the ON/VOL knob (1) fully counterclockwise.
2. Press the TP switch (17) and while keeping it pressed, turn the ON/VOL knob (1) clockwise to turn on the power.


Clarion
R·D·S CATS
CODE IN

Digital Display

"CODE IN" starts blinking on the display

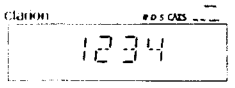
3. Input an arbitrary 4-digit number using the Preset buttons (1 to 5) (9)


Clarion
R·D·S CATS
1234
Clarion
R·D·S CATS
CODE IN

(Example) Input 1-2-3-4

"CODE IN" starts blinking again

4. Input the same four digits again.


Clarion
R·D·S CATS
1234

(Example) Input 1-2-3-4

The CATS code input is completed. Now the unit will operate normally.

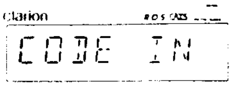
When the second input of the CATS code has been correctly done, the CATS code is registered. After "CATS ON" has been displayed, the power to the unit will be switched on.

Notes:

1. In case you have input a wrong 4-digit number in step 3:
   If, for example you input 2-2-3-4 instead of 1-2-3-4, input any 4 digit number other than 2-2-3-4 in step 4. The unit will then return to the condition in step 2, where the "CODE IN" blinks on the display. Continue by keying in the correct CATS code.
2. If the input numbers in steps 3 and 4 do not match.
   If you input, for example, 1-2-3-4 in step 3 and then 2-2-3-4 in step 4, the unit will return to its original condition. Continue with steps 3 and 4
3. In case you realise your mistake before entering all 4 digits in step 3 or 4, enter any digits to complete the entry. Then proceed as explained in notes 2 or 3 above.
   Proceed in the same way to correct input mistakes made during [2] Releasing CATS or [3] Erasing or Changing the CATS Code.

[2] Releasing CATS (when you have removed the car stereo or sent the car for servicing)

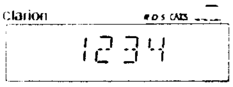
1. Turn the power on by turning the ON/VOL knob (1) clockwise


Clarion
R·D·S CATS
CODE IN

Digital Display

"CODE IN" starts blinking on the display

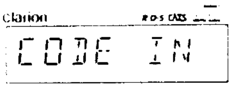
2. Input your CATS code


Clarion
R·D·S CATS
1234

(Example) Input 1-2-3-4

[3] Erasing and Changing the CATS Code

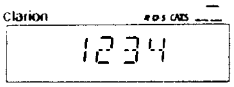
1. Turn the power off by turning the ON/VOL knob (1) fully counterclockwise.
2. Press the TP switch (17), and while keeping it down, turn the ON/VOL knob (1) clockwise to turn on the power.


Clarion
R·D·S CATS
CODE IN

Digital Display

"CODE IN" starts blinking on the display

3. Input your CATS code.


Clarion
R·D·S CATS
1234

The CATS code has now been erased, and the unit will operate normally
To input a new CATS code, follow the steps in [1] Entering the CATS Code

When the erasure of the CATS code has been completed, "CODE CLR" will be displayed. After this the power to the unit will be switched on.

Note: In case you input a wrong CATS code in step 3, the unit will return to the condition after step 1, so continue with steps 2 and 3.

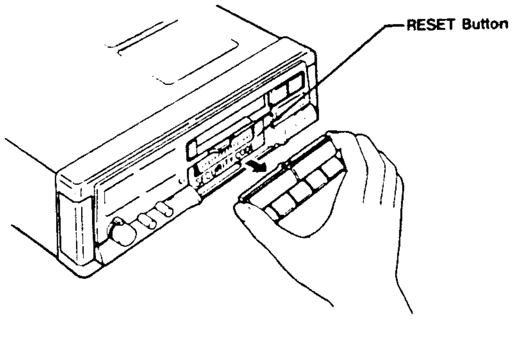
■OPERATION:

■ RESET Button

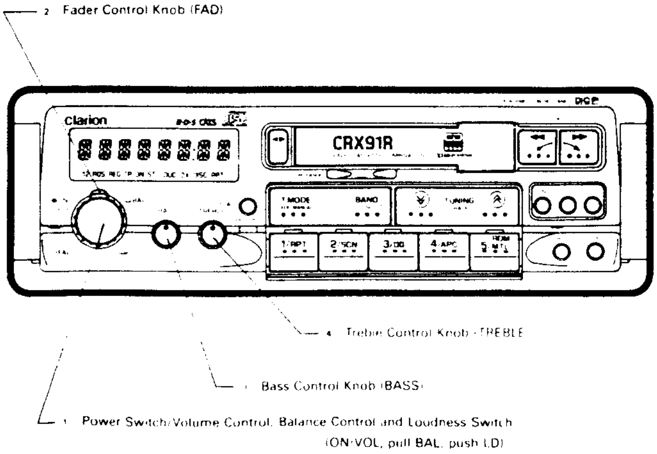
In case abnormal operation is noticed, such as strange displays, etc., pressing this button will return the unit to normal operation condition.

Note:

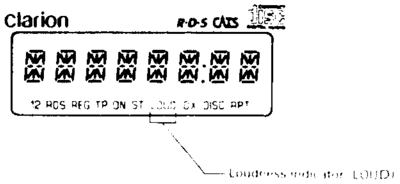
- Press the RESET button only after turning the ignition off.
- Do not press the RESET button when the unit has been removed from the car.
- Stations stored in the memory are lost when the RESET button is pressed. These stations must be stored anew after resetting. The memorized CATS code will never be lost.


RESET Button

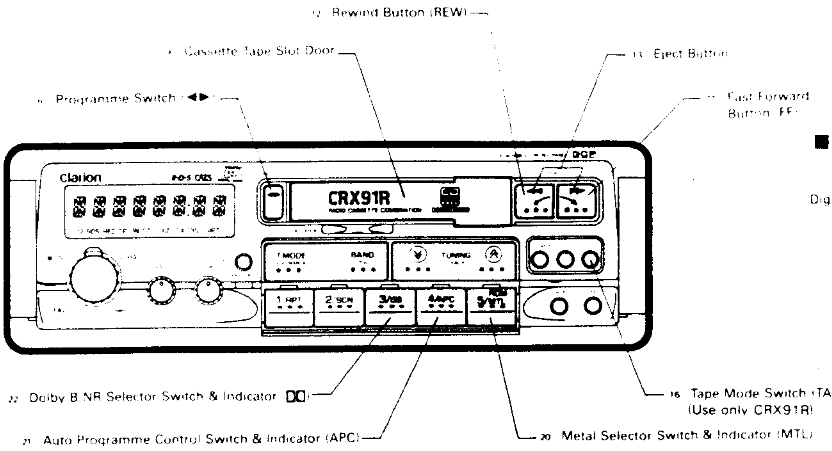
General Section


2 Fader Control Knob (FAD)
Clarion
R·D·S CATS
CRX91R
1/RPT
2/SCN
3/DD
4/APC
5/MTL
MODE
BAND
TUNING
4 Treble Control Knob (TREBLE)
3 Bass Control Knob (BASS)
1 Power Switch/Volume Control, Balance Control and Loudness Switch (ON/VOL, pull BAL, push LD)

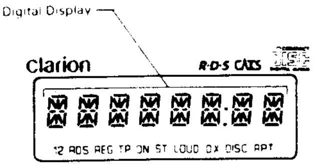
■ DISPLAY


Clarion
R·D·S CATS
12 RDS REG TP ON ST LOUD DX DISC RPT
Loudness indicator (LOUD)

Cassette Tape Playback


12 Rewind Button (REW)
Cassette Tape Slot Door
13 Eject Button
6 Programme Switch (◀▶)
Fast Forward Button (FF)
Clarion
CRX91R
T.MODE
BAND
TUNING
1 RPT
2 SCN
3/DB
4/APC
5/MTL
22 Dolby B NR Selector Switch & Indicator (DD)
16 Tape Mode Switch (TAPE) (Use only CRX91R)
21 Auto Programme Control Switch & Indicator (APC)
20 Metal Selector Switch & Indicator (MTL)

■ DISPLAY


Digital Display
Clarion
R·D·S
12 RDS REG TP ON ST LOUD DX DISC RPT

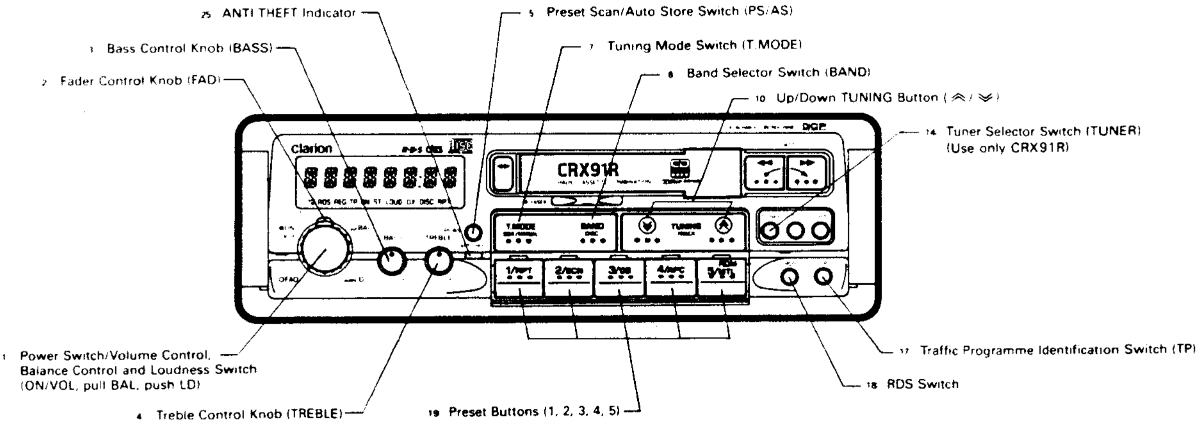
*** Tape Mode Switch** ☞ 16 (Use only CRX91R)
When listening to the radio and a tape has been inserted, pressing this switch will switch from the tuner to tape deck operation and playback starts automatically.

*** Programme Selection (◀▶)** ☞ 6

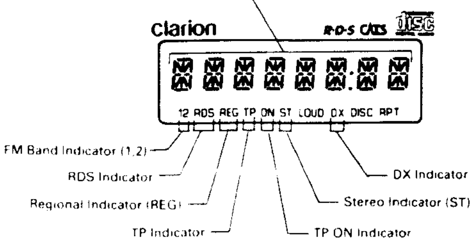
1) **Auto programme selection**
   When the end of the tape is reached, the auto programme selector functions to automatically switch to the following programme, and playback continues.
2) **Manual programme selection**
   The programme can be changed anytime during playback by pressing the programme button.
   The display will show in which direction the tape is playing, as follows:

Tape Transport Direction	
TAPE))	Upper tracks playing
TAPE ((	Lower tracks playing

Listening to the Radio

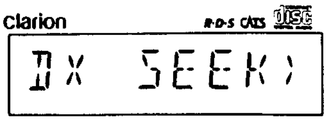

25 ANTI THEFT Indicator
1 Bass Control Knob (BASS)
2 Fader Control Knob (FAD)
5 Preset Scan/Auto Store Switch (PS/AS)
7 Tuning Mode Switch (T.MODE)
8 Band Selector Switch (BAND)
10 Up/Down TUNING Button (⩓/⩔)
14 Tuner Selector Switch (TUNER) (Use only CRX91R)
Clarion
CRX91R
1 Power Switch/Volume Control, Balance Control and Loudness Switch (ON/VOL, pull BAL, push LD)
4 Treble Control Knob (TREBLE)
19 Preset Buttons (1, 2, 3, 4, 5)
17 Traffic Programme Identification Switch (TP)
18 RDS Switch

■ TUNER MODE DISPLAY

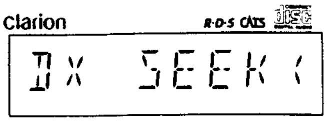

Digital Display
Clarion
R·D·S
12 RDS REG TP ON ST LOUD DX DISC RPT
FM Band Indicator (1,2)
RDS Indicator
Regional Indicator (REG)
TP Indicator
TP ON Indicator
Stereo Indicator (ST)
DX Indicator

*** Band Switch (BAND)** ☞ 8 **(Use only CRX91R)**
The radio band is switched as follows each time this switch is pressed: FM (1) → FM (2) → (MW/LW) → FM (1), and so on. The Band Indicator (1, 2) indicates the selected FM band (1 or 2) and goes out when MW/LW has been selected.
When MW/LW has been selected, the unit will interpret these two bands as one band. Thus, if searching for a station on MW and none is found, the unit will switch to LW and continue its search for stations, and vice versa.

*** Seek Tuning**
Press the T.MODE switch to clear "MAN" in the display. Also, if no button is pressed for five seconds when the Manual Tuning mode has been engaged, the unit will revert to the Seek Tuning mode.
Press the right side (⩓) of the TUNING button 10 to search for broadcasting stations at higher frequencies and to tune in the next station. Press the left side (⩔) to search at lower frequencies. "DX SEEK >" or "DX SEEK <", respectively, is displayed.

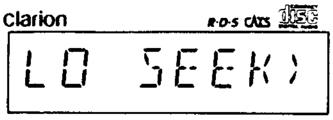

Clarion
R·D·S
DX SEEK >

DX SEEK Up

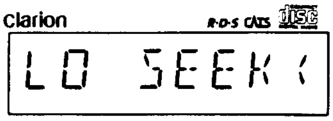

Clarion
R·D·S
DX SEEK <

DX SEEK Down

When pressing the TUNING button 10, the DX mode is set. To seek for stations in the Local mode (with lowered sensitivity), press the T.MODE switch 7 for 2 seconds or more. In this case "LO SEEK >" or "LO SEEK <" will be displayed.



Local SEEK Up



Local SEEK Down

- Use Local Seek (LO) to search for strong stations only, and DX Seek for all other stations.

✱ Preset Buttons (1, 2, 3, 4, 5) ☞ 19
It is possible to programme five stations on each of the FM 1, FM 2 and MW/LW bands. Each Preset button has two functions, depending on how long it is kept pressed.

- Press the Preset button for less than two seconds to recall a Preset station.
- Press the Preset button for more than two seconds to memorise the tuned in station.

✱ Memorizing Stations:

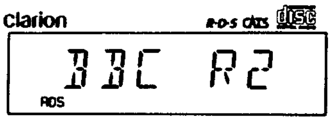
1. Tune in the station you want to memorise.
2. Press the Preset button (1 to 5) onto which the station should be memorised. While the station is being memorised, the audio output will be muted.
3. The sound is muted for approximately two seconds. When the sound is heard again, this signifies that the station has been entered into the preset memory.

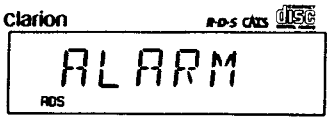
■ Using the Radio Data System (RDS)

✱ RDS Switch ☞ 18

- This switch is off when the unit is turned on for the first time.
- RDS only works on the FM band.
- When the RDS switch is switched on, "RDS" is displayed.

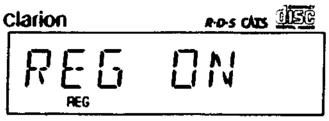
1. When an RDS broadcast station is received, the name of the received station will be displayed (PS: Programme Service name).
2. If the receiving conditions worsen while receiving an RDS broadcast, the unit will automatically switch to another frequency on which the same broadcast is available under better receiving conditions.
3. When an emergency broadcast, in which a PTY (Programme-Type code) alarm code is transmitted, is received during the reception of an RDS broadcast, "ALARM" will be displayed and the volume level will be increased and the broadcast message is heard.
   Notes:
   1. Even when listening to a tape or CD, the unit will switch to the radio and the emergency broadcast can be listened to. At this time the radio operation buttons cannot be used.
   2. By switching off the RDS switch during the emergency broadcast, the set will return to the tape or CD operation mode.

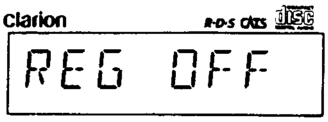




4. When the receiving conditions worsen while receiving an RDS broadcast and there is no stronger broadcast station transmitting the same broadcast, "RDS" will start flashing in a little while. When the receiving conditions improve, the flashing of "RDS" will stop.
5. When the right side (⋀) or the left side (⋁) of the TUNING button 10 is pressed while the RDS switch is on, the unit will only search for stations broadcasting RDS signals.
6. Preset Scan during RDS reception:
   Pressing the PS/AS switch 5 for less than two seconds when the RDS switch is switched on, only preset stations broadcasting the RDS signal will be tuned in.
   Auto Store during RDS reception:
   Pressing the PS/AS switch 5 for more than two seconds when the RDS switch is switched on, only RDS stations with different content will be stored on the Preset buttons 19.

- **Same Programme Search (PI: Programme Identification)**
  If you press a Preset button 19 on which an RDS station is stored and the station cannot be received (RDS indicator flashes), press the same Preset button 19 one more time ("SEARCH" is shown in the display). The set will search for stations at other frequencies with the same programme content, i.e. the same PI code, as the station stored in memory. Thus, a desired programme can easily be tuned in although the broadcasting frequency is unknown.
- **REG (Regional) Switching**
  1. Pressing the RDS switch 18 for 2 seconds or longer permits on/off switching of the Regional mode. The initial setting is the on state in which the "REG" indicator is lit.
     "REG ON" is displayed at the time the Regional mode is engaged, and "REG OFF" is displayed at the time the mode is disengaged.





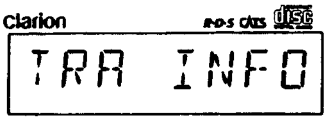
2. When the Regional mode is engaged (REG indicator lit), only the same station is automatically tracked.
   When the Regional mode is off, the local programme is tracked and you can continue to listen to a programme being switched from one station to another without any interruption.

Note:

- REG only works on the FM band.

✱ Traffic Programme Switch (TP) ☞ 17

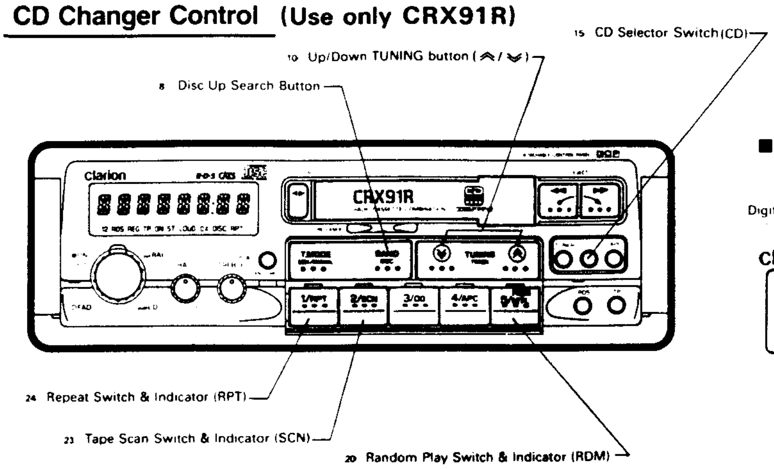
1. The TP switch is off when the unit is turned on for the first time.
2. When the TP switch is switched on, "ON" is displayed.
   When a TP station is received, the TP indicator lights. This indicates that the station is broadcasting the RDS TP code or the SK signal in case of ARI broadcast.
   When the TP switch is on and a station broadcasting traffic announcements is tuned in, the TP ON indicators are lit.
   "TRA INFO" is displayed when a traffic information announcement is broadcast. The volume will increase to the preset level and you will hear the the traffic announcement.



Notes:

1. Even when listening to a tape or CD, the unit will switch to the radio and the traffic information announcement can be listened to. At this time the radio operation buttons cannot be used.
2. Switching off the TP switch during the traffic information announcement, the unit will return to the tape or CD operation mode.
3. When the right side (⋀) or the left side (⋁) of the TUNING button 10 is pressed while the TP switch is on, the unit will only search for stations broadcasting the TP signal.
   Note:
   When this button is pressed in areas where traffic information is not broadcast, the seek operation is not cancelled and so the TP switch should be switched off to stop seek tuning.
4. Preset Scan when the TP switch is on:
   Pressing the PS/AS switch 5 for less than two seconds when the TP switch is switched on, only preset stations broadcasting the TP signal will be tuned in.
   Auto Store when the TP switch is on:
   Pressing the PS/AS switch 5 for more than two seconds when the TP switch is switched on, only stations broadcasting traffic information announcements will be stored on the Preset buttons 19.
   Note:
   The TP switch only works on the FM band.
5. In the tape mode or the CD mode when the TP indicator is lit, switching on the RDS switch 18 will provide continuous, automatic tracking of the TP station.

CD Changer Control (Use only CRX91R)


15 CD Selector Switch (CD)
10 Up/Down TUNING button (︽/︾)
8 Disc Up Search Button
clarion
CRX91R
24 Repeat Switch & Indicator (RPT)
23 Tape Scan Switch & Indicator (SCN)
20 Random Play Switch & Indicator (RDM)

✱ CD Selector Switch (CD) ☞ 15
This switch is used to switch from the tuner, cassette deck, or an external accessory component to the CD Changer mode. CD playback starts when this switch is pressed from the Tuner or Cassette mode.

When the CD Selector Switch 15 is pressed, "CD LOAD" is displayed, the power to the CD Changer is switched on, and playback starts from the first track on the first disc. (First time only)
If no magazine has been set in the CD Changer, "NO MAGAZ" will be displayed.

When the CD Selector Switch 15 is pressed, the display will first show "CD LOAD", then the disc number, and upon that the track number. During actual disc play, both the track and the played time will be displayed. Refer to the figure on the right for the display messages:

Display System		
1	CD selection	CD LOAD
2	DISC display	Disc No. 88 DISC
3	TRACK display	TRACK No. 88 TRACK
4	During play	TRACK No. P-TIME 88 88:88
	Random play	RANDOM
	No magazine	NO MAGAZ
	No such disc	NO DISC

Error Display

- CD Auto-changer
  1. Mechanism failure
  2. Temperature rising and bedewing
- Tuner
  1. PLL unlocked
- Tape
  1. Mechanism failure

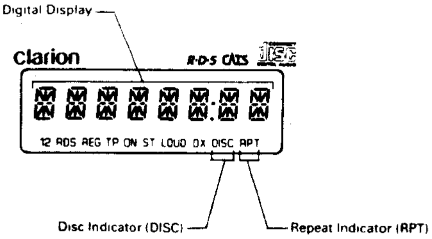
"Error" message is displayed due to the cases above.

■ Last Position Memory Function

This function stores in memory the track that was being played when the power was switched off while a CD was playing or when another mode was selected. The next time playback on the CD Changer is started, play will begin from the beginning of the last track played.

✱ Disc UP Search Button ☞ 8
This button is used when you wish to listen to a different CD.
Pressing the Disc UP button 8, the CD Changer will set the next higher disc, the disc number will be displayed, and playback continues from the selected disc.
With each subsequent press of the button, the disc number will change and the disc corresponding to the number displayed on the digital display at that time will be played.
If there is no disc in the place corresponding to the displayed number, "NO DISC" will be displayed on the digital display and the player will automatically change to the next disc and play it.

■ DISPLAY



■ Track Search ☞ 10

Press the right side of the TRACK button (︽) to start playback from the next track. Press the left side of the TRACK button (︾) to return to the beginning of the track currently being listened to and continue play from there.
To move ahead or back several tracks at once, press either side of the TRACK button repeatedly.

■ Fast Forward/Fast Return ☞ 10

Keeping the right side of the TRACK button (︽) pressed, high-speed playback in the forward direction is engaged.
Keeping the left side of the TRACK button (︾) pressed, high-speed playback in the reverse direction is engaged.
Release the button to stop high-speed playback and resume normal playback.

✱ Repeat Switch (RPT) ☞ 24
Press the RPT switch once to repeatedly play back the current selection. The RPT indicator will light.
Press the RPT switch once more for repeat playback of the current DISC. The DISC and RPT indicators will lights.
Press the RPT switch a third time to disengage repeat playback, and confirm that the DISC and RPT indicators go off.

✱ CD Selector Switch (CD) ☞ 15
This switch is used to switch from the tuner, cassette deck, or an external accessory component to the CD Changer mode. CD playback starts when this switch is pressed from the Tuner or Cassette mode.

When the CD Selector Switch 15 is pressed, "CD LOAD" is displayed, the power to the CD Changer is switched on, and playback starts from the first track on the first disc. (First time only)
If no magazine has been set in the CD Changer, "NO MAGAZ" will be displayed.

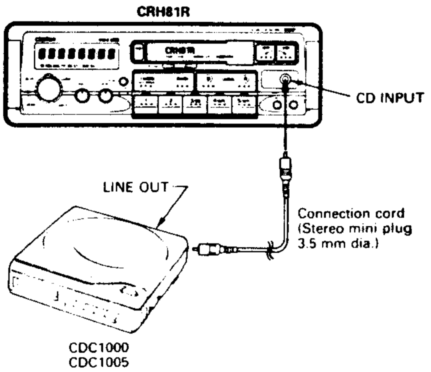
When the CD Selector Switch 15 is pressed, the display will first show "CD LOAD", then the disc number, and upon that the track number. During actual disc play, both the track and the played time will be displayed. Refer to the figure on the right for the display messages:

■CONNECTION OF PORTABLE CD PLAYER:

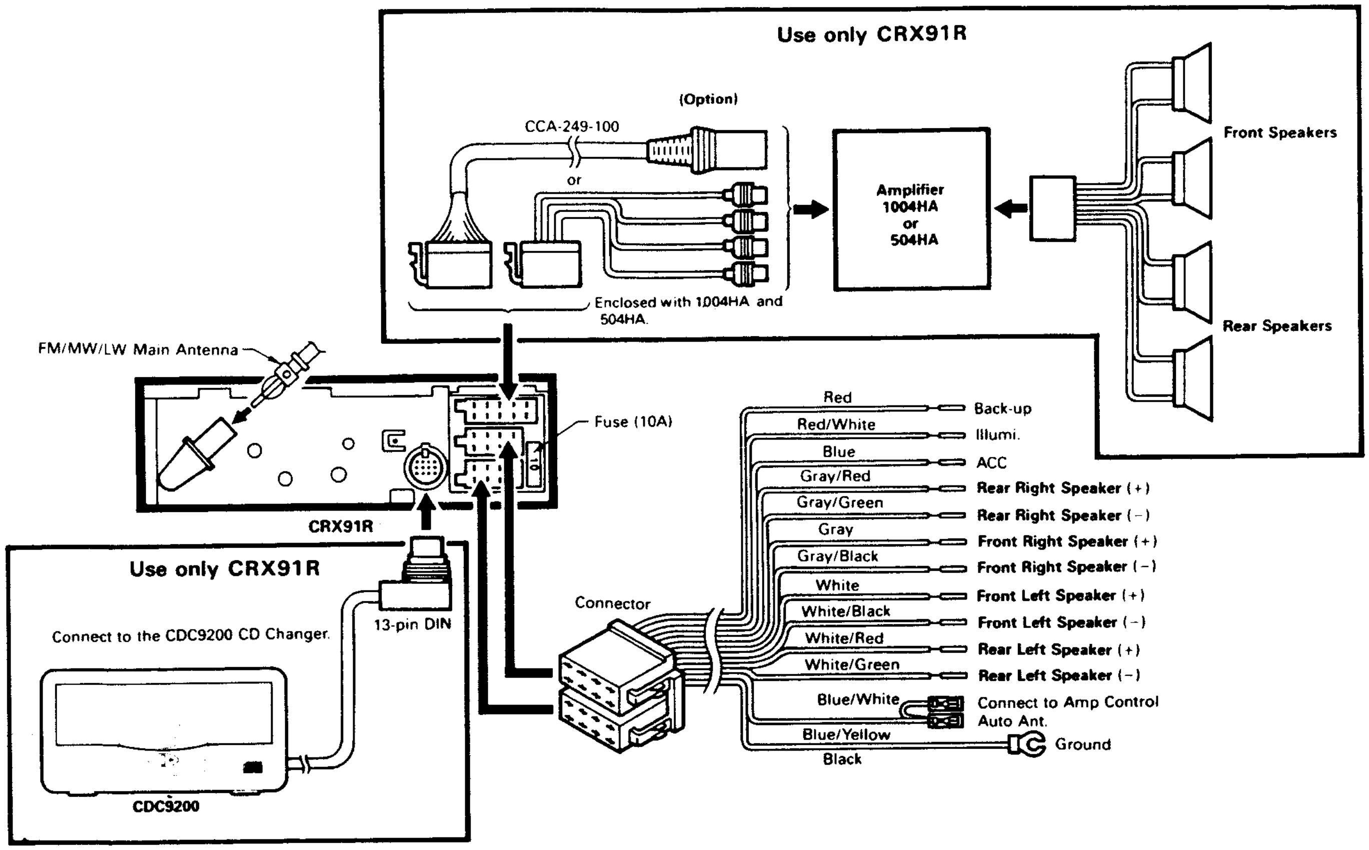
(Use only CRH81R)

Portable CD players such as the CDC-1000 or CDC-1005 can be connected to the jack on the front panel.

Notes:
1. If the plug is inserted into the CD jack while the tape deck is operating, the tape deck is set to the stop mode and the CD mode is set.
2. The unit may not offer its full performance if portable CD players other than the ones specified (CDC-1000 or CDC-1005) are connected.

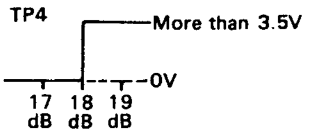
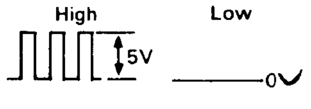


■WIRE CONNECTION:



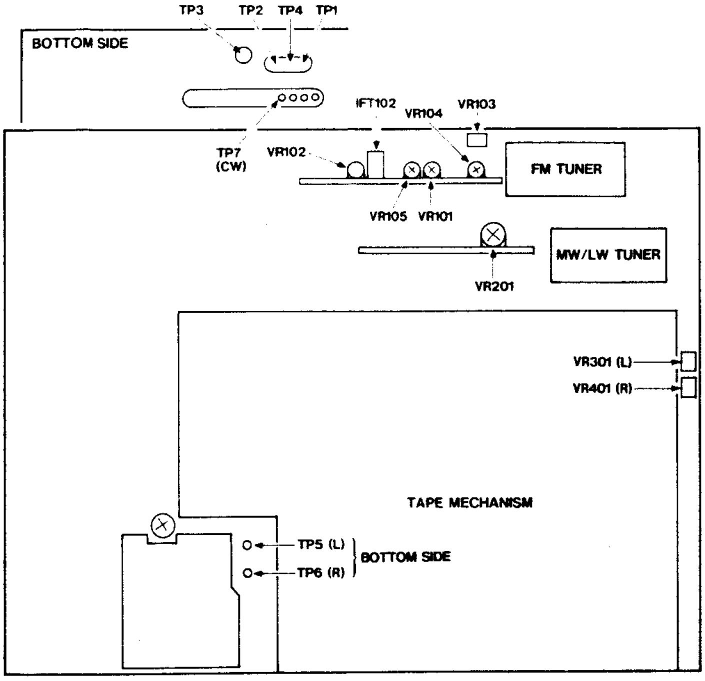
Use only CRX91R
(Option)
CCA-249-100
or
Enclosed with 1004HA and 504HA.
Amplifier
1004HA
or
504HA
Front Speakers
Rear Speakers
FM/MW/LW Main Antenna
Fuse (10A)
CRX91R
Use only CRX91R
Connect to the CDC9200 CD Changer.
13-pin DIN
CDC9200
Connector
Red
Back-up
Red/White
Illumi.
Blue
ACC
Gray/Red
Rear Right Speaker (+)
Gray/Green
Rear Right Speaker (−)
Gray
Front Right Speaker (+)
Gray/Black
Front Right Speaker (−)
White
Front Left Speaker (+)
White/Black
Front Left Speaker (−)
White/Red
Rear Left Speaker (+)
White/Green
Rear Left Speaker (−)
Blue/White
Connect to Amp Control
Auto Ant.
Blue/Yellow
Ground
Black

■ADJUSTMENT:

Adjustment item	Adjustment point	Procedure
0V	IFT102	1. Connect the digital voltmeter to TP1 and TP2. 2. Input the 98.1MHz/55dB signal and adjust the reading of digital voltmeter to 0.000V±50mV by IFT102.
Limiter	VR104	1. Input the 98.1MHz/18dB SSG signal. (400Hz MOD) 2. Adjust VR to make the set output 0dB (2.45V). 3. Reduce the output of SG 10dB. 4. Adjust VR104 untill output level decrease to 3dB.
SD	VR105	1. Input the 98.1MHz/18dB signal (400Hz MOD). 2. Adjust VR105 so that the voltage of TP4 is in the range 0V to 3.5V.  TP4 More than 3.5V 0V 17 dB 18 dB 19 dB
S-meter	VR103	1. Connect the digital voltmeter to TP3. 2. Input the 98.1MHz frequency at 65dB (400Hz MOD) and adjust the level to 4.5V±0.1V by VR103.
SASC	VR101	1. Input the 98.1MHz/65dB, 7kHz modulation frequency, 30% modulation degree SSG signal. 2. Adjust the output level of the volume controller to 0dBm (2.45V). 3. Set the SSG output to 33dB and adjust VR101 so that the output level is −2dB.
Separation	VR102	1. Input the 98.1MHz, connect the output of a stereo modulator to the external modulation terminal, and input a 65dB SSG signal. 2. Set the stereo modulator to the L or R ch and adjust VR102 so that the maximum separation is obtained.
CW (Carrier Wave)	VR201	1. Input the 98.1MHz/55dB, 1kHz (MONO) modulation frequency, 2.0kHz modulation rate SSG signal. 2. Connect the oscilloscope to TP7. 3. Adjust VR103 so that the waveform of TP7 is in the range 5V to 0V. (2.0±0.2kHz)  High Low 5V 0V
Dolby NR	VR301 and VR401	Insert a Dolby level test tape (400Hz−200nWb/m), connect the milli-volt meter to TP5 and TP6, and adjust VR301 and VR401 to obtain an output of 245mV ± 1dB.

●SPECIFICATION —LIMIT— Quieting sensitivity: MW Less than 32dB (at 20dB S/N)
LW Less than 39dB (at 20dB S/N)
UKW Less than 12dB (at 30dB S/N)
Stereo separation: UKW More than 20dB

● ADJUSTMENT POINT


TP3
TP2
TP4
TP1
BOTTOM SIDE
IFT102
VR104
VR103
TP7
(CW)
VR102
FM TUNER
VR105
VR101
MW/LW TUNER
VR201
VR301 (L)
VR401 (R)
TAPE MECHANISM
TP5 (L)
TP6 (R)
BOTTOM SIDE

■TAPE MECHANISM

1. Head-azimuth Adjustment

Make playback for the azimuth-tape (8kHz, −10VU), and turn each azimuth-adjusting screw to make each FWD & REV maximum. After adjustment, make adhesion with bond.

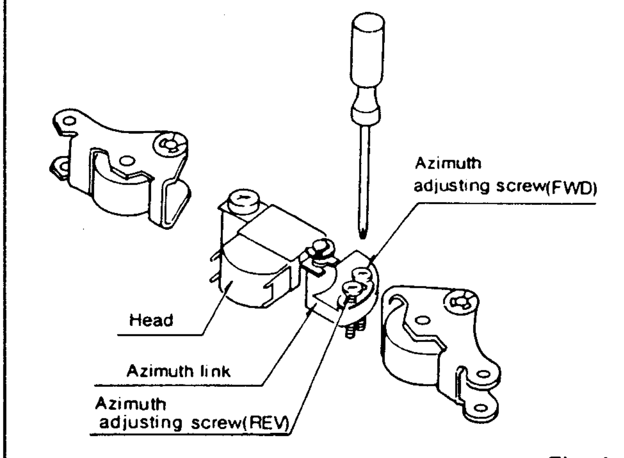

Azimuth
adjusting screw(FWD)
Head
Azimuth link
Azimuth
adjusting screw(REV)

Fig 1

■EXPLANATION OF IC's:

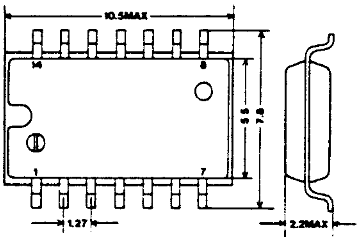
Refer to description in IC service manual vol. 1.			
KC-819	**051-0606-01**	**Hybrid IC for Tone Control**	**P23**

Refer to description in IC service manual vol. 2.			
NJM2058M	**051-0556-01**	**Quad. OP. Amp.**	**P41**
LA2000C	**051-0620-00**	**Music Interval Detection**	**P43**
AN6263N	**051-0561-02**	**Music Interval Detection**	**P42**
NJM4558M	**051-0350-55**	**Dual OP.Amp.**	**P39**

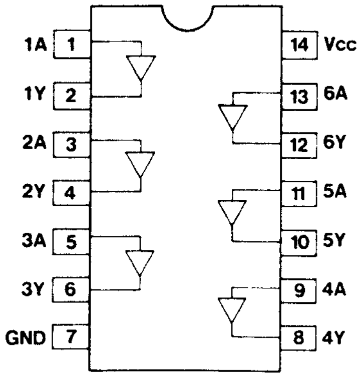
Refer to description in IC service manual vol. 3.			
μPD7225G-00	**051-1151-00**	**Programmable LCD Controller/Driver**	**P27**
TC4013BF	**051-0142-05**	**C-MOS IC**	**P44**
MB3771PF(-G)	**051-0869-05**	**Power source voltage Supervisory IC**	**P41**
LB0354	**051-0619-01**	**Loudness with Muting**	**P22**
TA8205AH	**051-0958-01**	**15W BTL×2 ch Power Amp.**	**P24**
CXA1102M	**051-1038-01**	**Dolby B Type Noise Reduction System**	**P14**

■HD74LS07FPD 051-0160-56 Hex Buffers/Drivers

Outward Form


10.5MAX
14
8
1
7
5.5
7.8
1.27
2.2MAX

Block Diagram


1A 1
1Y 2
2A 3
2Y 4
3A 5
3Y 6
GND 7
14 Vcc
13 6A
12 6Y
11 5A
10 5Y
9 4A
8 4Y

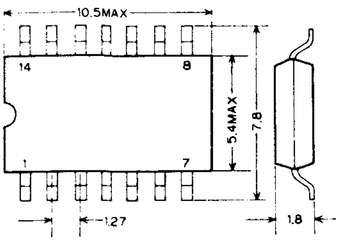
Truth Table

A	Y
H	H
L	L

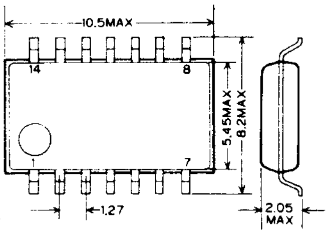
Y = A

■TC4066BF 051-0267-05 QUAD BILATERAL SWITCH
MC14066BF 051-0267-35

Outward Form

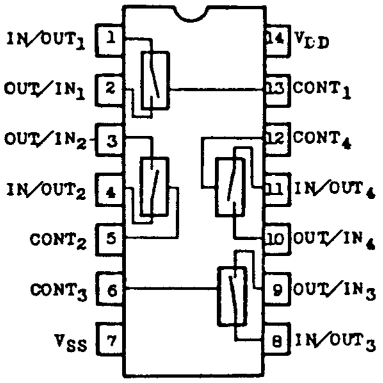

10.5MAX
14
8
1
7
5.4MAX
7.8
1.27
1.8

TC4066BF


10.5MAX
14
8
1
7
5.45MAX
8.2MAX
1.27
2.05 MAX

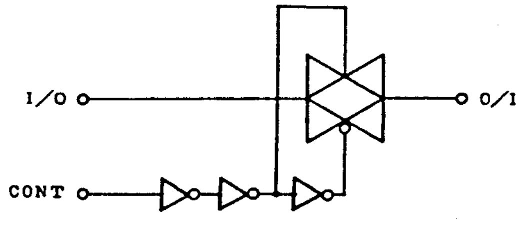
MC14066BF

Terminal Connection


IN/OUT1 1
OUT/IN1 2
OUT/IN2 3
IN/OUT2 4
CONT2 5
CONT3 6
VSS 7
14 VDD
13 CONT1
12 CONT4
11 IN/OUT4
10 OUT/IN4
9 OUT/IN3
8 IN/OUT3

(TOP VIEW)

Block Diagram

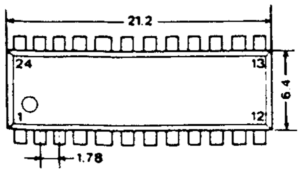


Truth Table

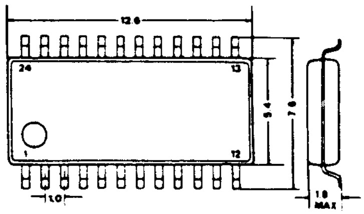
CONTROL	Impedance Between IN/OUT-OUT/IN
H	$0.5 \sim 5 \times 10^2 \Omega$
L	$>10^9 \Omega$

■LA2231-A 051-1144-01 RDS Decoder
LA2231M-B 051-1144-10

Outward Form


21.2
24
13
1
12
6.4
1.78

LA2231-A

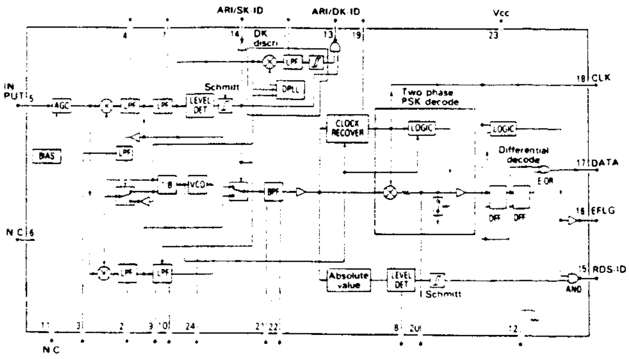

12.6
24
13
1
12
1.0
1.8 MAX

LA2231M-B

Function

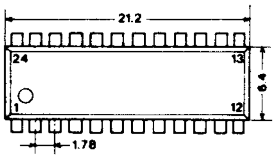
(1) DSB demodulation
(2) Sub carrier wave regeneration
(3) Bit rate clock regeneration
(4) Data differential decoding
(5) ARI-SK discrimination
(6) ARI-DK discrimination
(7) RDS indicator driving
(8) ARI indicator driving
(9) Data error indicating output

Block Diagram

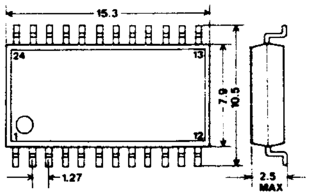

ARI/SK ID
ARI/DK ID
Vcc
DK discri
Schmitt
DPLL
IN PUT
AGC
LPF
LEVEL DET
Two phase PSK decode
CLOCK RECOVER
LOGIC
BIAS
Differential decode
E OR
VCO
BPF
DATA
CLK
EFLG
RDS ID
N C
Absolute value
I Schmitt
AND

■LC7218 051-1323-00 Electronic Tuning PLL Frequency Synthesizer
LC7218M 051-1323-05

Outward Form

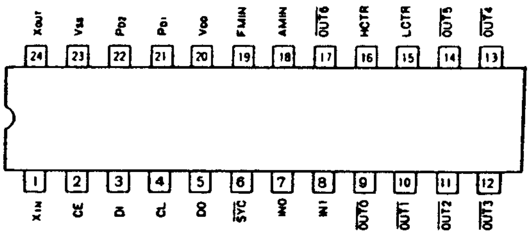

21.2
24
13
1
12
6.4
1.78

LC7218

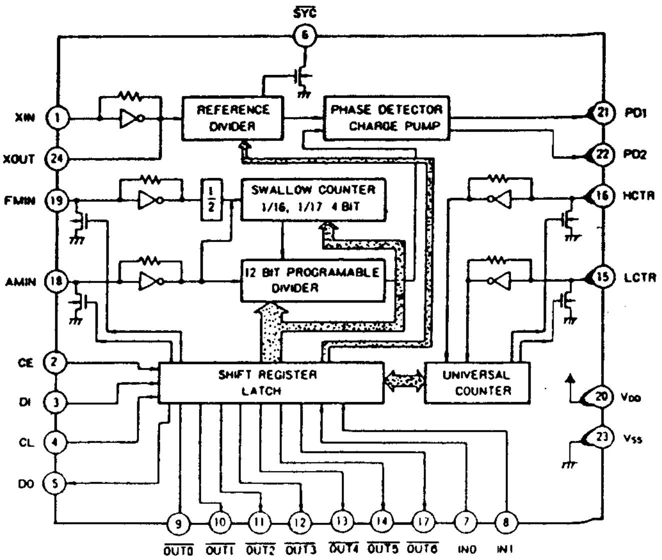

15.3
24
13
1
12
7.9
10.5
1.27
2.5 MAX

LC7218M

Terminal Connection


Xout 24
Vss 23
PD2 22
PD1 21
VDD 20
FMIN 19
AMIN 18
OUT6 17
HCTR 16
LCTR 15
OUT5 14
OUT4 13
XIN 1
CE 2
DI 3
CL 4
DO 5
SYC 6
IN0 7
IN1 8
OUT0 9
OUT1 10
OUT2 11
OUT3 12

Block Diagram


SYC
6
XIN 1
XOUT 24
FMIN 19
AMIN 18
CE 2
DI 3
CL 4
DO 5
REFERENCE DIVIDER
PHASE DETECTOR CHARGE PUMP
1/2
SWALLOW COUNTER 1/16, 1/17 4 BIT
12 BIT PROGRAMABLE DIVIDER
SHIFT REGISTER LATCH
UNIVERSAL COUNTER
21 PD1
22 PD2
16 HCTR
15 LCTR
20 VDD
23 VSS
9 OUT0
10 OUT1
11 OUT2
12 OUT3
13 OUT4
14 OUT5
17 OUT6
7 IN0
8 IN1

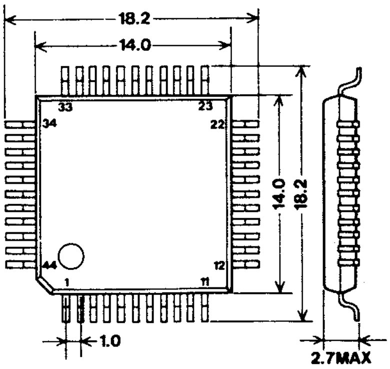
Terminal Connection Table

No.	Terminal name	Function
1 24	X_{IN} X_{OUT}	Crystal connecting terminal. (7.2MHz)
2	CE	Chip enable terminal: H level when input and output serial data.
3	DI	Input data terminal: Serial data input, transferred from controller to this IC.
4	CL	Clock terminal: Synchronous clock when input and output serial data.
5	DO	Output data terminal: Serial data output, transferred from this IC to controller.
6	SYC	Controller clock terminal. (400kHz)
7 8	IN0 IN1	Input port: Signal from both terminals is transformed from parallel to serial data, output from DO output terminal.
9 ~ 14 17	OUT0 ~ OUT5 OUT6	Output port: Serial data $0_0 \sim 0_6$ transferred from controller is latched, inverting data to output parallel data.
15	LCTR	General purpose counter frequency/input terminal for cycle measuring signal.
16	HCTR	Input terminal for signal measuring general purpose counter frequency.
18	AMIN	Input terminal for local oscillating signal.
19	FMIN	Input terminal for local oscillating signal.
20	V_{DD}	Power terminal.
21 22	PD1 PD2	Charge pump output terminal.
23	V_{SS}	Ground terminal.

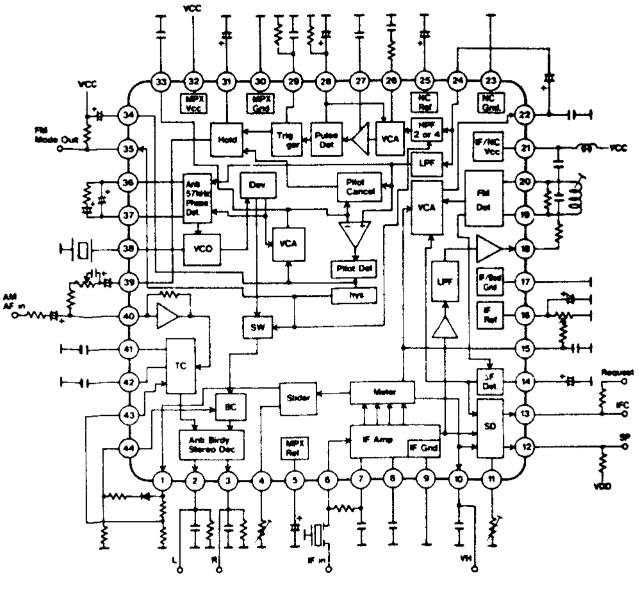
■TA8151F(CLAR) 051-1371-00 FM PROCESSOR

TA8151 is a FM tuner IC, which is integrated from IF to MPX stages into one chip.

Outward Form


18.2
14.0
33
23
34
22
44
12
1
11
14.0
18.2
1.0
2.7MAX

Block Diagram


VCC
VCC
FM Mode Out
AM AF in
MPX Vcc
MPX Gnd
NC Ref
NC Gnd
Hold
Trig ger
Pulse Det
VCA
HPF 2 or 4
IF/NC Vcc
LPF
Anti 57kHz Phase Det
Dev.
Pilot Cancel
FM Det
VCO
VCA
VCA
Pilot Det
hys
LPF
IF/Det Gnd
IF Ref
SW
TC
Slider
Meter
ΔF Det
BC
Anti Birdy Stereo Dec
MPX Ref
IF Amp
IF Gnd
SD
Request
IFC
SP
VDD
VCC
L
R
IF in
VH
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44

Function

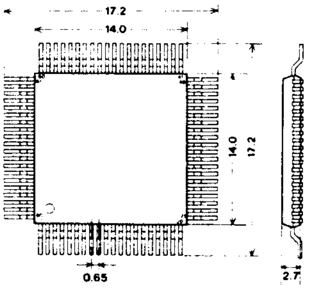
IF	IF limiter amplification/differential peak FM detection/meter output/electric field strength muting/detuning muting/stop detection/IF counting request.
NC	Noise detection/noise AGC/noise detecting wave changeover/signal delay/unadjusted pilot cancellation/signal holding.
MPX	Unadjusted PLL method stereo decoder/blender control/tone control (low-cut, high-cut)/anti-ARI/anti-birdie.

Terminal Connection

Pin No.	Symbol	Function
1	SO	Slider output terminal.
2	L out	MPX output terminal.
3	R out	
4	Slide	Blender of MPX unit, controllable range setting terminal for electric field strength of tone.
5	Ref. 3	3rd nominal voltage terminal.
6	IF in	IF amp. input terminal.
7	Bias	Provide bias to 6th pin via R.
8	By 1	IF amp. bypass terminal.
9	G 1	IF amp. ground terminal.
10	Meter	Meter output terminal in FM mode, and meter input terminal for slider circuit in AM mode.
11	SD	Sensitivity setting terminal of station detector.
12	SP	Pulse counting output terminal stopped by station detector.
13	IFC	IF counting output terminal.
14	ΔF	ΔF detector output smoothing terminal.
15	SM	Soft-mute characteristic setting terminal.
16	Ref 1	1st nominal voltage terminal.
17	G 4	Sub-straight ground terminal.
18	IF out	IF limiter amp. output terminal.
19	Det 1	Input terminal of differential peak detection.
20	Det 2	
21	B 1	Power terminals of IF and NC units.
22	AF out	Audio signal output terminal.
23	G 2	Ground terminal.
24	NC in	Input terminal of noise canceler unit.
25	Ref 2	2nd nominal voltage terminal.
26	By 2	AGC amp. bypass terminal of noise canceler unit.
27	By 3	Noise amp. bypass terminal of noise canceler unit.
28	AGC	Noise AGC time-constant setting terminal of noise canceler unit.
29	PW	Trigger-pulse range setting terminal of noise canceler unit.
30	G 3	Ground terminal of MPX unit.
31	Hold	Composite signal holding terminal of noise canceler unit.
32	B 2	Power terminal of MPX unit.
33	P	Canceling signal output terminal for pilot cancellation.
34	PiD	Output terminal of pilot detection circuit.
35	Mode	Mode output terminal of stereo/mono selection.
36	PhD1	Output terminal of phase detection circuit.
37	PhD2	
38	VCO	VCO circuit oscillation terminal.
39	NC out	Noise canceler output terminal.
40	MPX in	MPX input terminal.
41	LC	Cut-off frequency setting terminal.
42	HC	
43	TC	Tone-control (low-cut, high-cut) control terminal.
44	BC	Blender control terminal.

■μPD75328GC-115-3B9 051-1380-02 Slave Micro Computer

Outward Form



Outline

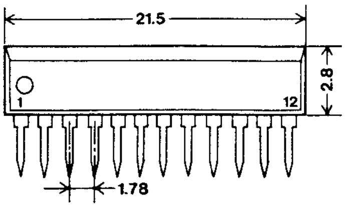
(1) The IC, as slave microcomputer, is to have function for data communication via serial bus interface with master microcomputer.
(2) RDS decoder IC and synchronizing/correcting IC are controlled to input RDS data.

Terminal Connection

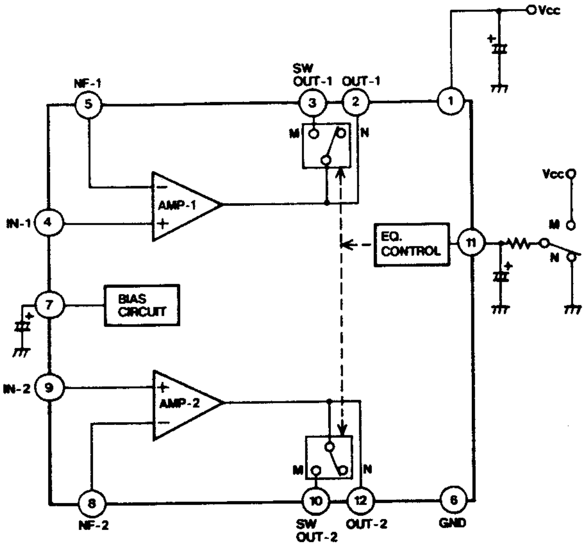
<table>
<tr><th>Pin No.</th><th>Terminal Name</th><th>I/O</th><th>Function</th></tr>
<tr><td>1 ~ 28</td><td></td><td>O</td><td>Unused (OPEN).</td></tr>
<tr><td>29</td><td>$\overline{\text{DK IND}}$</td><td>I</td><td>ARI DK IND detection port.
Active : LOW</td></tr>
<tr><td>30</td><td>$\overline{\text{SK IND}}$</td><td>I</td><td>ARI SK IND detection port.
Active : LOW</td></tr>
<tr><td>31</td><td>$\overline{\text{RDS IND}}$</td><td>I</td><td>RDS IND detection port.
Active : LOW</td></tr>
<tr><td>32</td><td>M6/$\overline{\text{M5}}$</td><td>I</td><td>Detection port of M6/M5 selection.
High=M6, Low=M5</td></tr>
<tr><td>33</td><td>GND</td><td>I</td><td></td></tr>
<tr><td>34</td><td>R/$\overline{\text{CD}}$</td><td>O</td><td>RADIO/CD audio changeover port.
High=RADIO, Low=CD Auto Changer</td></tr>
<tr><td>35</td><td>$\overline{\text{REMOTE}}$</td><td>O</td><td>REMOTE Output port.
Active : LOW</td></tr>
<tr><td>36</td><td>$\overline{\text{MUTE}}$</td><td>O</td><td>MUTE Output port.
Active : LOW</td></tr>
<tr><td>37</td><td>$\overline{\text{SRQ}}$</td><td>O</td><td>Service Request Output port.
Active : LOW</td></tr>
<tr><td>38</td><td>ACC DET</td><td>I</td><td>Detection port of ACC power ON/OFF (POWER DCP); master microcomputer controls ACC-CONT.
High=ACC-ON, Low=ACC-OFF
Active : High</td></tr>
<tr><td>39</td><td>$\overline{\text{SCK}}$</td><td>O</td><td>Serial bus line SCK port.</td></tr>
<tr><td>40</td><td>SO</td><td>O</td><td>Serial bus line SO port.</td></tr>
<tr><td>41</td><td>SI</td><td>I</td><td>Serial bus line SI port.</td></tr>
<tr><td>42</td><td>RDS CLK</td><td>I</td><td>RDS CLOCK input port.
RDS data is input from LC7070.</td></tr>
<tr><td>43
44</td><td></td><td>I</td><td>GND</td></tr>
<tr><td>45</td><td>PLL DO IN</td><td>I</td><td>PLL data input.</td></tr>
<tr><td>46</td><td>RDS DATA</td><td>I</td><td>RDS DATA input port.
RDS data is input from LC7070.</td></tr>
<tr><td>47</td><td>RDS START</td><td>I</td><td>RDS DATA START bit input port.
RDS data is input from LC7070.</td></tr>
<tr><td>48
49</td><td>RDS ERROR
RDS CORR</td><td>I
I</td><td>ERROR
LOW : Incorrectable error occurred.
HI : No error occurred or corrected.
CORRECTION
<table>
<tr><th></th><th>CORR</th><th>ERROR</th></tr>
<tr><td>No error</td><td>H</td><td>H</td></tr>
<tr><td>Corrected</td><td>L</td><td>H</td></tr>
<tr><td>Incorrectable</td><td>L</td><td>L</td></tr>
</table></td></tr>
<tr><td>50</td><td></td><td>O</td><td>Unused (OPEN).</td></tr>
<tr><td>51</td><td>PLL CLK</td><td>O</td><td>PLL clock output.</td></tr>
<tr><td>52</td><td>PLL DI OUT</td><td>O</td><td>PLL data output.</td></tr>
<tr><td>53</td><td>PLL CE</td><td>O</td><td>PLL chip enable port.
Active : High</td></tr>
<tr><td>54</td><td>LPF change-over</td><td>O</td><td>Low-pass filter changeover port.</td></tr>
<tr><td>55</td><td>ST ON/OFF</td><td>O</td><td>Stereo/mono changeover port.
Active : High</td></tr>
<tr><td>56</td><td>ANT DUMP</td><td>O</td><td>Hi : Antenna sensitivity decreased.
Active : High</td></tr>
<tr><td>57</td><td>AV_{REF} OUT</td><td>O</td><td>A/D nominal voltage output.</td></tr>
<tr><td>58</td><td>FM S-METER</td><td>I</td><td>FM s-meter input. (Analog input)</td></tr>
<tr><td>59
60
61
62
63</td><td></td><td>I</td><td>GND.</td></tr>
<tr><td>64</td><td>A/D GND</td><td>I</td><td>A/D converter GND.</td></tr>
<tr><td>65</td><td>A/D REF</td><td>I</td><td>Input of A/D converter nominal voltage.</td></tr>
<tr><td>66</td><td>V_{DD}</td><td></td><td>Supply voltage of 5V.</td></tr>
<tr><td>67</td><td>XT1</td><td>I</td><td>GND.</td></tr>
<tr><td>68</td><td>XT2</td><td>–</td><td>Unused (OPEN).</td></tr>
<tr><td>69</td><td>V_{PP}</td><td></td><td>Connect to V_{DD}.</td></tr>
<tr><td>70
71</td><td>X1
X2</td><td></td><td>System clock.</td></tr>
<tr><td>72</td><td>$\overline{\text{RESET}}$</td><td>I</td><td>RESET input. Active : Low</td></tr>
<tr><td>73</td><td>$\overline{\text{RDS RESET}}$</td><td>O</td><td>Function to reset LC7070.
Active : Low</td></tr>
<tr><td>74</td><td>IF REQ</td><td>O</td><td>IF REQUEST output port. Active : High</td></tr>
<tr><td>75</td><td>IF MUTE</td><td>O</td><td>IF MUTE output. Active : High</td></tr>
<tr><td>76</td><td>$\overline{\text{DX}}$/LO</td><td>O</td><td>DX/LO changeover output port.
Low : DX, High : Local</td></tr>
<tr><td>77</td><td></td><td>I</td><td>GND.</td></tr>
<tr><td>78</td><td>FM SD</td><td>I</td><td>FM SD input port. Active : High</td></tr>
<tr><td>79</td><td>$\overline{\text{CW}}$ IN</td><td>I</td><td>CW (Carrier Wave) detection input port.
Active : Low</td></tr>
<tr><td>80</td><td>$\overline{\text{ST}}$ IN</td><td>I</td><td>ST detection input port.
Active : Low</td></tr>
</table>

■TA8162SN 051-1423-00 Pre-Amp.

Outward Form

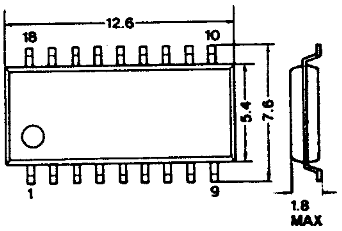

21.5
2.8
1
12
1.78

Block Diagram

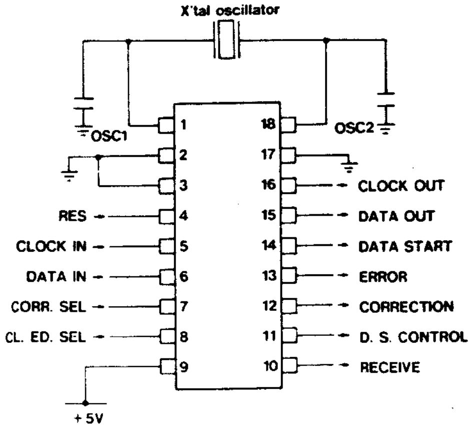

Vcc
NF-1
SW OUT-1
OUT-1
5
3
2
1
M
N
AMP-1
IN-1
4
Vcc
M
EQ. CONTROL
11
N
7
BIAS CIRCUIT
IN-2
9
AMP-2
M
N
8
10
12
6
NF-2
SW OUT-2
OUT-2
GND

■LC7071NM 051-1150-10 Sync/Error correction LSI for RDS

Outward Form


12.6
18
10
5.4
7.6
1
9
1.8 MAX

Terminal Connection


X'tal oscillator
OSC1
OSC2
1
2
3
4
5
6
7
8
9
18
17
16
15
14
13
12
11
10
RES
CLOCK IN
DATA IN
CORR. SEL
CL. ED. SEL
CLOCK OUT
DATA OUT
DATA START
ERROR
CORRECTION
D. S. CONTROL
RECEIVE
+5V

Terminal Connection Table

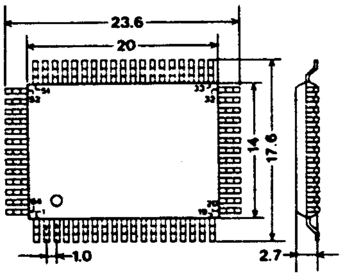
Pin No.	Symbol	Function
1 18	OSC 1 OSC 2	Connection terminal for crystal oscillator. Allows connection of 4.5MHz crystal.
2 3 17	GND	Ground.
4	RES	Reset terminal.
5	CLOCK IN	RDS recovery clock input.
6	DATA IN	RDS recovery data input.
7	CORR SEL	Correction or non correction input for input signal.
8	CL. ED. SEL	Serial output clock polarity setting input.
9	Vcc	Power supply terminal (5V).
10	RECEIVE	After finishing a synchronous detection, while serial output is made, L level output is applied. In other cases, H level output.
11	D. S. CONTROL	Data start signal control input.
12	CORRECTION	Correction output terminal.
13	ERROR	Error output terminal.
14	DATA START	Block data start signal.
15	DATA OUT	Data output for serial output.
16	CLOCK OUT	Clock output for serial output.

■μPD75116GF-699-3BE 051-1381-02 Master Micro Computer
μPD75116GF-762-3BE 051-1381-04

※051-1381-04 is a performance improved device of 051-1381-02.

Note: With the aid of the diode switch (initializing diode matrix), this microcomputer is available for SF-X mechanism (full logic mechanism) and RM-4 (mechanical mechanism). Some functions of each terminal and key may be classified by setting the diode switch.

I. Outward Form


23.6
20
64
33
52
32
14
17.6
84
20
1
19
1.0
2.7

II. Outline

(1) The IC, as master microcomputer, is to have function for data communication via serial bus interface with slave microcomputer, SF-X mechanism microcomputer, CD auto-changer.
(2) LCD driver is controlled by serial data.
(3) Tuner unit is compatible with RDS.
(4) DCP (Detachable Control Panel).
(5) Dual illumination.
(6) Direct changeover for TAPE/RADIO/CD auto-changer.

III. Terminal Connection

Pin No.	Terminal Name	I/O	Function
63 64 1 2 3 4 5 6	KO3 KO2 KO1 KO0 KO7 KO6 KO5 KO4	O	Key scan signal output.
7	$\overline{\text{RESET}}$	I	RESET signal input. Usually, High
8 9	X2 X1		System clock.

Pin No.	Terminal Name	I/O	Function
10	CATS-LED	O	CATS-LED output.
11	CH1-LED		CH1-LED output. (RPT)
12	CH2-LED		CH2-LED output. (SCAN)
13	CH3-LED		CH3-LED output. (DOLBY)
14	CH4-LED		CH4-LED output. (BLS)
15	CH5-LED		CH5-LED output. (RDM)
16	CH6-LED		CH6-LED output.
17	W ILLMI		DUAL-ILLUMI output.
19	D-SET	O	Flip-flop control output for serial interface (C-BUS).
20	D-RESET		
21	DK-OUT	O	Output of LOW signal with VOL increasing, when interrupted with traffic information and emergency broadcasting.
22	LOUD-OUT REMOTE	O	LOUDNESS ON/OFF signal output. LOUDNESS ON : High
23	MTL-OUT	O	(1) SF-X mechanism Unused (OPEN) (2) RM-4 mechanism METAL ON/OFF signal output. METAL ON : High
24	CD-STOP	O	CD STOP signal output. CD STOP : High
25	REM-1	O	AMP. power supply ON/OFF control signal output. AMP. ON : High
26	Vss	I	GND.
27	PS/AS	I	PS/AS detect signal input. Active : High In TUNER ON, the preset scanning operation is started when the key is released within 2 sec, while the auto store operation is started when the key is held down over 2 sec.
28	GND	I	
29	EJECT	I	(1) SF-X mechanism EJECT key detect signal input. Detection is made at High. (2) RM-4 mechanism Unused (OPEN).
30	$\overline{\text{BACK UP}}$	I	Input terminal to detect +B (battery) power off: Low when +B is off.
31	GND	I	
32	$\overline{\text{LCD-BUSY}}$	I	LCD-BUSY input. Active : Low
33	GND	I	
34			
35	GND	I	
37	$\overline{\text{LCD-RESET}}$	O	LCD-RESET output. Active : Low
38	ACC-CONT REM-2	O	ACC control signal output for slave microcomputer. ACC ON : High, ACC OFF : Low
39	APC-ON/OFF	O	(1) SF-X mechanism Unused (OPEN). (2) RM-4 mechanism APC ON/OFF signal output. APC ON : High
40	BEEP	O	Sensor tone signal output. (4kHz)
41	SI	I	Serial bus line data input.
42	SO	O	Serial bus line data output.
43	$\overline{\text{SCK}}$	O	Serial bus line clock output.
44	ACC IN	I	ACC power ON/OFF detect input. ACC power ON : High ACC power OFF : Low
45	$\overline{\text{SRQ}}$	I	Serial bus line SRQ (Service Request) input. Request queuing occurred at "Low" position. Normally "High" position.
46	$\overline{\text{PACK IN}}$	I	(1) SF-X mechanism Unused (GND). (2) RM-4 mechanism Cassette PACK IN/OUT signal input. PACK IN : Low, PACK OUT : High
47	FWD/$\overline{\text{REV}}$	I	(1) SF-X mechanism Unused (GND). (2) RM-4 mechanism Tape running direction detect signal input. FWD : High, REV : Low
48	$\overline{\text{CD-REMOTE}}$	I	CD PLAY detect signal input. CD PLAY : Low, CD STOP or CD OFF : High

<table>
<tr><th>Pin No.</th><th>Terminal Name</th><th>I/O</th><th>Function</th></tr>
<tr><td>49
50</td><td>DOLBY-ON
DOLBY-BC</td><td>O</td><td>(1) When DOLBY C is set to ON by the diode switch.
<table>
<tr><th>Pin 49</th><th>Pin 50</th><th>DOLBY</th></tr>
<tr><td>H</td><td>H</td><td>DOLBY C</td></tr>
<tr><td>H</td><td>L</td><td>DOLBY B</td></tr>
<tr><td>L</td><td>L</td><td>OFF</td></tr>
</table>
(2) When DOLBY C is set to OFF by the diode switch.
<table>
<tr><th>Pin 49</th><th>Pin 50</th><th>DOLBY</th></tr>
<tr><td>L</td><td>H</td><td>DOLBY B</td></tr>
<tr><td>H</td><td>L</td><td>OFF</td></tr>
</table></td></tr>
<tr><td>51</td><td>$\overline{\text{R}}$/T</td><td>O</td><td>(1) SF-X mechanism
Unused (OPEN).
(2) RM-4 mechanism
RADIO/TAPE selector.
TAPE : High, RADIO : Low</td></tr>
<tr><td>52</td><td>$\overline{\text{MUTE}}$</td><td>O</td><td>System MUTE signal output.
MUTE ON : Low, MUTE OFF : High</td></tr>
<tr><td>53
54
55
56</td><td>KEYIN3
KEYIN2
KEYIN1
KEYIN0</td><td>I</td><td>Key signal input.</td></tr>
<tr><td>57</td><td>Vpp</td><td></td><td>Connect to V_{DD}.</td></tr>
<tr><td>58</td><td>V_{DD}</td><td></td><td>Supply voltage of 5V.</td></tr>
<tr><td>59</td><td>LCD C/$\overline{\text{D}}$</td><td>O</td><td>LCD-COMMAND/DATA output.
COMMAND : High, DATA : Low</td></tr>
<tr><td>60</td><td>LCD-$\overline{\text{CS}}$</td><td>O</td><td>LCD-CHIP SELECT output. Active : Low</td></tr>
<tr><td>61</td><td>LCD-DATA</td><td>O</td><td>LCD-DATA output.</td></tr>
<tr><td>62</td><td>LCD-SCK</td><td>O</td><td>LCD-SCK output.</td></tr>
</table>

Ⅳ. Key Matrix

§ 1. Key Matrix Table

IN \ OUT	KOUT0 (pin2)	KOUT1 (pin1)	KOUT2 (pin64)	KOUT3 (pin63)	KOUT4 (pin6)	KOUT5 (pin5)	KOUT6 (pin4)	KOUT7 (pin3)
KEYIN0 (pin56)		M1/RPT	M2/SCAN	M3/DOLBY	RDS	TP		DOLBC
KEYIN1 (pin55)		M4/BLS (APC)	M5/RDM (MTL)	M6	CD	TUNER		
KEYIN2 (pin54)		UP	DOWN	T-MODE	PSAS	STMONO	LOUD	MINIJA
KEYIN3 (pin53)		BAND/PRO	TAPE	LOUD2		ILLUMI		SFX

( ) ······ RM-4 mechanism

☐ Momentary SW ◹ Diode SW

Note: This microcomputer set is not always equipped with all of these keys.

§ 2. Diode Switch (Initializing Diode Matrix)

*The following table shows that the diode is SHORT in case of "1" and OPEN in case of "0".

Switch Name	Function
DOLBC	Set DOLBY B-C or DOLBY B. 0: DOLBY B 1: DOLBY B-C
SFX	Set RM-4 or SF-X mechanism. 0: RM-4 mechanism 1: SF-X mechanism
MINIJA (Use only for RM-4 mechanism)	Set CD deck or portable CD player. 0: Portable CD player 1: CD deck

§ 3. Momentary Switch

Switch Name	Function
TUNER	TUNER ON key.
BAND PRO	o BAND selector key when TUNER ON. → FM1 → FM2 → AM(MW/LW) — o The function changes with the mechanism when TAPE ON. (1) SF-X mechanism Program change or PLAY key. (2) RM-4 mechanism Key is invalid. o DISC UP key when CD ON.
TAPE	TAPE ON key.
PS/AS	In TUNER ON, the preset scanning operation is started when the key is released within 2 sec, while the auto store operation is started when the key is held down over 2 sec.
LOUD LOUD2	LOUDNESS ON/OFF key.
CD	CD auto changer ON key.
T-MODE	In TUNER ON, the UP and DOWN key operation is selected when the key is released within 2 sec., while the DX/LO operation is selected when the key is held down over 2 sec.
UP DOWN	The function changes with each operation of TUNER, CD, and TAPE keys. o When TUNER ON MANU ON: Manual UP/DOWN MANU OFF: Seek UP/DOWN o When CD ON When the key is pressed over 1 sec: FF/FB start When the key is pressed within 1 sec: Track UP/DOWN o When TAPE ON (1) SF-X mechanism: FF/REW start key. SCAN OFF: REW ↔ REW APC FF ↔ FF APC SCAN ON: REW ↔ SCAN REW APC FF ↔ SCAN FF APC (2) RM-4 mechanism: The key is invalid.
M1 REPEAT	o When TUNER ON Preset channel 1 call and write key. o When CD ON TRACK REPEAT ON/OFF key. o When TAPE ON (1) SF-X mechanism: REPEAT ON/OFF key. (2) RM-4 mechanism: The key is invalid.
M2 SCAN	o When TUNER ON Preset channel 2 call and write key. o When CD ON SCAN ON/OFF key. o When TAPE ON (1) SF-X mechanism: SCAN ON/OFF key. (2) RM-4 mechanism: The key is invalid.
M3 DOL	o When TUNER ON Preset channel 3 call and write key. o When TAPE ON DOLBY select (ON/OFF) key.
M4 BLS (APC)	o When TUNER ON Preset channel 4 call and write key. o When TAPE ON (1) SF-X mechanism: BLS (Blank Skip) ON/OFF key. (2) RM-4 mechanism: APC ON/OFF key.
M5 RANDOM (MTL)	o When TUNER ON Preset channel 5 call and write key. o When CD ON RANDOM PLAY ON/OFF key. o When TAPE ON (1) SF-X mechanism: The key is invalid. (2) RM-4 mechanism: METAL ON/OFF key.
M6	Preset channel 6 call and write key.
STMONO	ST/MONO selector key.
ILLUMI	Illumination selector key.
RDS	o Push RDS key for less than 2 seconds to shift RDS ON/OFF. o Push RDS key for more than 2 seconds to shift REG ON/OFF. o Push M3 key following to RDS key within 2 seconds to display "PTY". o Push M1 key following to RDS key within 2 seconds to display presently receiving "PI" for 5 seconds.
TP	o Push TP key for less than 2 seconds to shift TP ON/OFF. o Push TP key for more than 2 seconds to shift into sound volume adjusting mode.

■PARTS LIST:

◎Electrical section

◎MAIN P.W.B

REF. NO.	PART NO.	DESCRIPTION	Q'TY
D607〜610	001-0330-00 001-0294-00	Diode 1SS119 Diode 1SS133	4
D503	001-0334-00	Diode DSA17B	1
D205, 501, 502 603, 605	001-0356-00 001-0354-00	Diode 1SS184 Diode MA151WK	5
D606	001-0361-10	Diode 1SS198	1
D101, 102	001-0367-00	Diode 1SS226	2
D510, 606	001-0423-23	Diode MA4082	2
D103, 104, 509	001-0423-24	Diode MA4091	3
D504〜508	001-0466-00 001-0499-00	Diode S5688B Diode ERA15-01	5
D601, 602	001-0525-00	Diode IMN10	2
IFT102	005-1017-00	IF-transformer	1
IFT101	005-1022-01	IF-transformer	1
L502, 503	009-0470-03	Choke	2
L501	009-0633-01	Choke	1
L104, 105	010-1892-07	Coil	2
L103	010-2174-36	Coil 1mH	1
L107	010-2199-00	Coil 0.1μH	1
L101	010-2199-16	Coil 2.2μH	1
L102	010-2199-21	Coil 5.6μH	1
L106, 201	010-2199-40	Coil 220μH	2
VR501	012-3808-09 012-3808-07	Variable resisotor 47k(91R) Variable resisotor 22k(81R)	1
VR301, 401	012-4318-06	Variable resisotor 10k	2
VR201	012-4318-09	Variable resisotor	1
VR103	012-4318-13	Variable resisotor 470k	1
VR101, 102	012-4863-07	Variable resisotor 22k	2
VR105	012-4863-10	Variable resisotor 100k	1
VR104	012-4863-12	Variable resisotor 330k	1
R529	032-0084-00	Film resistor 10 Ω	1
R506	032-0098-02	Film chip resistor 43k Ω	1
R311, 411	032-0100-02	Film resistor 15k Ω	2
R310, 410	032-0100-03	Film resistor 1k Ω	2
C609	042-0200-00	Tantalum-C 10V 47μF TAN	1
C512	042-0428-00	Electrolytic-C 16V 2200μF	1
C511	042-0439-00	Electrolytic-C 10V 220μF	1
C508, 560, 813	042-0452-01	Electrolytic-C 10V 220μF	3
C504, 509	042-0452-02	Electrolytic-C 16V 100μF	2
C105, 180, 902	043-0229-01	Ceramic chip-C 0.068μF	3
C119, 139	043-0229-03	Ceramic chip-C 0.1μF	2
C513	043-0251-00	Film capacitor 0.1μF	1
CCT601	050-0077-07 050-0091-05	Component circuit 1kx4(91R) Component circuit 1kx3(81R)	1
CCT201	050-0086-60	Component circuit 10kx8	1
IC603	051-0142-35 051-0142-05	IC MC14013BF IC TC4013BF	1
IC606	051-0160-56	IC HD74LS07FPD	1
IC102, 501	051-0267-35 051-0267-05	IC MC14066BF IC TC4066BF	2
IC506	051-0350-55	IC NJM4558M	1
IC202, 507	051-0556-01	IC NJM2058M	2
IC901	051-0561-01	IC AN6263N	1
IC504	051-0606-01 051-0606-71	IC KC-819 IC	1
IC503	051-0619-01	IC LB0354	1
IC205	051-0620-00	IC LA2000C	1

REF. NO.	PART NO.	DESCRIPTION	Q'TY
IC604	051-0869-05	IC MB3771PF	1
IC505	051-0958-01 051-0958-51	IC TA8205AH IC MC13306T3S	1
IC502	051-1038-01	IC CXA1102M	1
IC203	051-1144-10	IC LA2231M-B	1
IC204	051-1150-10	IC LC7071NM	1
IC605	051-1187-00	IC TA78DL05P	1
IC103	051-1323-05	IC LC7218M	1
IC101	051-1371-00	IC TA8151F	1
IC602	051-1375-05	IC	1
IC201	051-1380-02	IC μPD75328GC-115	1
IC601	051-1381-04	IC μPD75116GF-762-3BE	1
IC801	051-1423-00	IC TA8162SN	1
X202	060-0115-02	Ceramic resonator	1
SUP101	060-0122-10	Surge protector	1
X201, 601	060-0130-50	Ceramic resonator 4.19M	2
X203	060-0146-50	Ceramic resonator	1
BPF201	060-0177-00	Band pass filter 57K	1
BPF101	060-0235-00	Band pass filter	1
DC101	060-0236-00	DC-DC-convertor	1
X101	060-0240-00	Ceramic resonator	1
X102	061-1066-00	Crystal 7.2M	1
Q608	100-1048-00	Transistor 2SA1048	1
Q103, 612	100-1162-00	Transistor 2SA1162	2
Q108	100-1175-00	Transistor 2SA1175	1
Q109	100-1297-00	Transistor 2SA1297	1
Q507, 509, 903	100-1431-00	Transistor 2SA1431	3
Q110, 512, 615	102-1846-00	Transistor 2SC1846	3
Q105, 107 111~115 501, 502, 504 615, 901, 904 905	102-2712-50	Transistor 2SC2712GR	14
Q607	102-3732-00	Transistor 2SC3732	1
Q104, 301, 302 303, 401, 402 403, 503	103-1306-00	Transistor 2SD1306	8
Q511	103-1858-00	Transistor 2SD1858	1
Q106	108-0372-00	Transistor 2SK372	1
Q601	125-0002-03 125-0014-03	Transistor RN2403 Transistor DTA143	1
Q203, 506, 610	125-0002-06 125-0014-06	Transistor RN2406 Transistor DTA143	3
Q101, 102, 116 117, 505, 508 510, 609, 611 613, 614, 902	125-2004-03 125-2020-03	Transistor RN1403 Transistor DTC124	12
Q602~606	125-2004-06 125-2020-06	Transistor RN1406 Transistor DTC143	5
R141, 144, 521 619	116-1021-10	Chip resistor 1/8W 1kΩ	4
R610~614	116-3311-10	Chip resistor 1/8W 330Ω	5
R101, 208, 518 519	116-4701-10	Chip resistor 1/8W 47Ω	4
R609	116-4711-10	Chip resistor 1/8W 470Ω	1
R138, 323, 324 423, 424	117-1011-10	Chip resistor 1/10W 100Ω	5

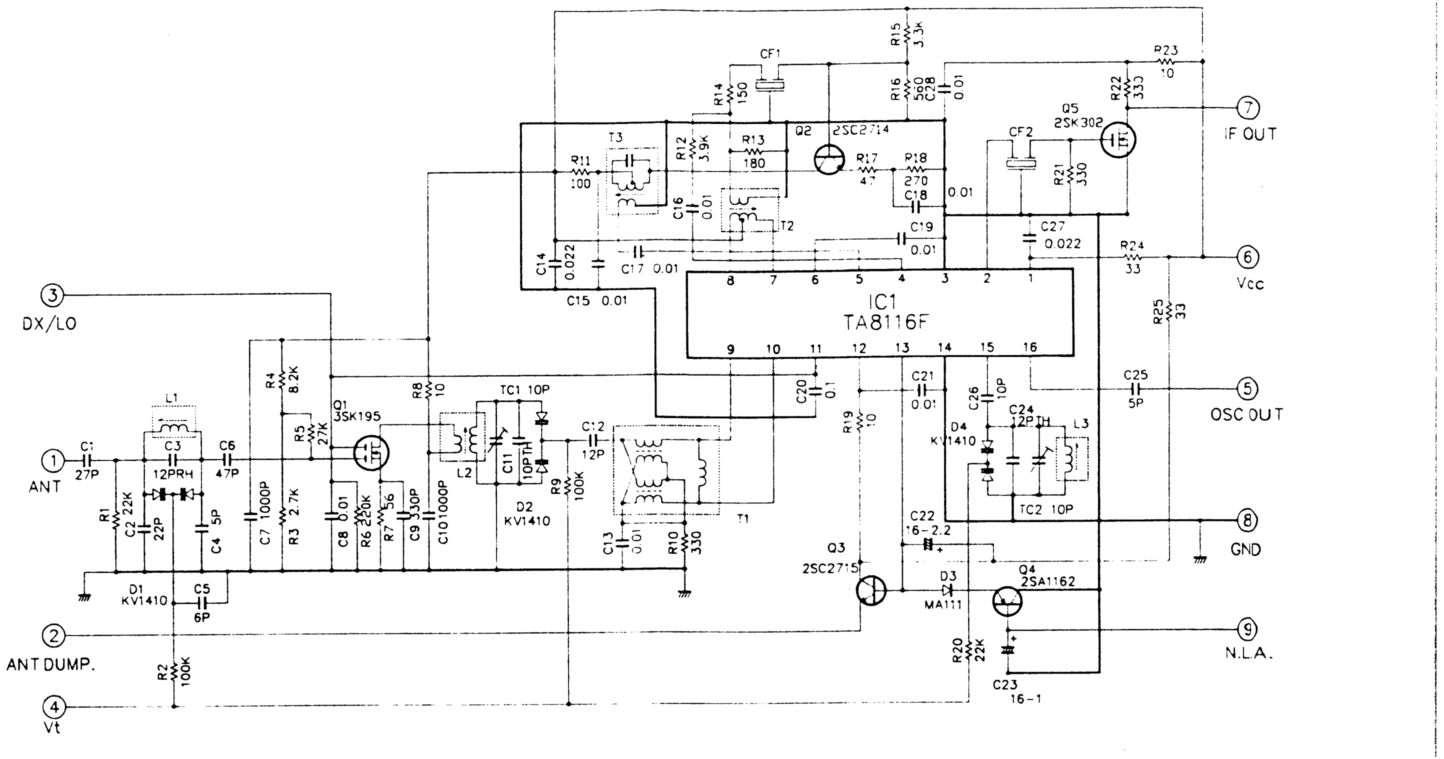
REF. NO.	PART NO.	DESCRIPTION	Q'TY
R131, 134, 159 219, 307, 309 327, 328, 407 409, 427, 428 517, 625, 628 637, 638, 639	117-1021-10	Chip resistor 1/10W 1kΩ	18
R105, 115, 124 125, 130, 142 143, 151, 205 206, 221, 250 303, 315, 316 325, 326, 403 415, 416, 425 426, 504, 508 509, 510, 513 514, 515, 520 523, 525, 526 601~604 616, 618, 622 624, 629, 680 901, 902, 909 910	117-1031-10	Chip resistor 1/10W 10kΩ	47
R133, 152, 155 209, 308, 408 621, 623	117-1041-10	Chip resistor 1/10W 100kΩ	8
R213, 620, 632	117-1051-10	Chip resistor 1/10W 1MΩ	3
R302, 402, 807 808	117-1231-10	Chip resistor 1/10W 12kΩ	4
R158, 306, 319 320, 406, 419 420, 507	117-1521-10	Chip resistor 1/10W 1.5kΩ	8
R630	117-1541-10	Chip resistor 1/10W 150kΩ	1
R154, 803, 804	117-1811-10	Chip resistor 1/10W 180Ω	3
R122, 350, 450	117-1821-10	Chip resistor 1/10W 1.8kΩ	3
R104, 116, 809 810	117-1831-10	Chip resistor 1/10W 18kΩ	4
R108, 114, 157 351, 451	117-2221-10	Chip resistor 1/10W 2.2kΩ	5
R107, 220, 801 802, 904, 911 912	117-2231-10	Chip resistor 1/10W 22kΩ	7
R129, 137, 201 202, 207, 903	117-2241-10	Chip resistor 1/10W 220kΩ	6
R110, 159	117-2711-10	Chip resistor 1/10W 270Ω	2
R321, 322, 421 422	117-2721-10	Chip resistor 1/10W 2.7kΩ	4
R118, 119, 135 145, 156, 210 211, 301, 401 516	117-3321-10	Chip resistor 1/10W 3.3kΩ	10
R111, 811	117-3331-10	Chip resistor 1/10W 33kΩ	2
R635, 805, 806	117-3341-10	Chip resistor 1/10W 330kΩ	3
R153	117-3921-10	Chip resistor 1/10W 3.9kΩ	1
R217	117-3941-10	Chip resistor 1/10W 390kΩ	1
R605~608	117-4711-10	Chip resistor 1/10W 470Ω	4
R117, 132, 148 305, 405, 511 512, 522	117-4721-10	Chip resistor 1/10W 4.7kΩ	8

REF. NO.	PART NO.	DESCRIPTION	Q'TY
R113, 123, 501 502, 503, 505 615, 633, 681 905, 908	117-4731-10	Chip resistor 1/10W 47kΩ	11
R128, 139, 317 318, 417, 418 530	117-4741-10	Chip resistor 1/10W 470kΩ	7
R126	117-5611-10	Chip resistor 1/10W 560Ω	1
R204, 617	117-5621-10	Chip resistor 1/10W 5.6kΩ	2
R304, 404	117-5631-10	Chip resistor 1/10W 56kΩ	2
R109	117-6801-10	Chip resistor 1/10W 68Ω	1
R136	117-6811-10	Chip resistor 1/10W 680Ω	1
R103, 112, 149 634	117-6821-10	Chip resistor 1/10W 6.8kΩ	4
R102, 146, 212	117-6831-10	Chip resistor 1/10W 68kΩ	3
R127	117-8221-10	Chip resistor 1/10W 8.2kΩ	1
R106, 203, 631	117-8231-10	Chip resistor 1/10W 82kΩ	3
R218	117-8241-10	Chip resistor 1/10W 820kΩ	1
R140, 150	118-5611-10	Chip resistor 1/2W 560Ω	2
C317, 417	171-1222-06	Ceramic capacitor 1200PF	2
C162	172-6831-10	Polyester capacitor 0.068μF	1
C319, 320, 419 420	173-1542-10	Polyester capacitor 0.15μF	4
C523	173-2222-10	Polyester capacitor 2200PF	1
C129	176-1007-04	Ceramic chip-C 10PF TH	1
C170, 171, 172 601	176-1011-00	Ceramic chip-C 100PF CH	4
C167, 168, 169	176-1801-00	Ceramic chip-C 18PF CH	3
C176	176-2211-00	Ceramic chip-C 220PF	1
C144, 202	176-3311-00	Ceramic chip-C 330PF CH	2
C118, 133	176-4711-00	Ceramic chip-C 470PF CH	2
C164, 229, 230	177-3332-05	Ceramic chip-C 0.033 μF	3
C115	177-3932-05	Ceramic chip-C 0.039 μF	1
C107, 127, 128 135, 136, 154 156, 158, 166	177-4732-05	Ceramic chip-C 0.047 μF	9
C124, 149, 152 208, 219, 350 351, 450, 451 606	178-1022-05	Ceramic chip-C 1000PF	10
C104, 106, 109 111, 122, 123 131, 141, 163 173, 209, 210 212, 213, 214 215, 221, 602 604, 607, 608 610	178-1032-05	Ceramic chip-C 0.01μF	22
C808, 809	178-1232-05	Ceramic chip-C 0.012μF	2
C138, 302, 402	178-2222-05	Ceramic chip-C 2200PF	3
C101, 140, 228 501, 901	178-2232-05	Ceramic chip-C 0.022μF	5
C218, 220, 301 401	178-3322-05	Ceramic chip-C 3300PF	4
C103, 145	178-4722-05	Ceramic chip-C 4700PF	2
C231	178-6822-05	Ceramic chip-C 6800PF	1
C803, 804	178-8212-05	Ceramic chip-C 820PF	2
C516	179-2273-31	Electrolytic-C 16V 220 μF	1
C114, 801, 802	182-1053-62	Electrolytic-C 50V 1μF	3
C110, 112, 117 309, 312, 408 409, 412	182-1063-32	Electrolytic-C 16V 10μF	8
C314, 414	182-1066-22	Electrolytic-C 10V 10μF NP	2
C216	182-1073-12	Electrolytic-C 6.3V 100μF	1
C113, 157, 161 520, 612	182-1073-22	Electrolytic-C 10V 100μF	5
C519	182-1073-32	Electrolytic-C 16V 100μF	1
C310, 410	182-2243-62	Electrolytic-C 50V 0.22μF	2
C316, 416	182-2256-52	Electrolytic-C 35V 2.2μF NP	2
C318, 418	182-2263-32	Electrolytic-C 16V 22μF	2
C153, 155	182-3363-42	Electrolytic-C 25V 33μF	2
C321, 322, 421 422	182-4743-62	Electrolytic-C 50V 0.47μF	4
C313, 325, 326 411, 413, 425 426	182-4753-52	Electrolytic-C 35V 4.7μF	7
C315, 415	182-4756-32	Electrolytic-C 16V 4.7μF NP	2
C147	182-4763-12	Electrolytic-C 6.3V 47μF	1
C102, 108, 507	182-4763-22	Electrolytic-C 10V 47μF	3
C323, 324	182-4763-32	Electrolytic-C 16V 47μF	2
C201	183-1043-62	Electrolytic-C 50V 0.1μF	1
C137, 142, 143 148, 175, 203 204, 206, 305 405, 505, 521 811, 812	183-1053-62	Electrolytic-C 50V 1μF	14
C116, 132, 134 160, 205, 222 308, 502, 515 517, 605, 807 810, 903	183-1063-32	Electrolytic-C 16V 10μF	14
C130	183-2253-62	Electrolytic-C 50V 2.2μF	1
C211, 217, 224 510	183-2263-12	Electrolytic-C 6.3V 22μF	4
C611	183-2263-32	Electrolytic-C 16V 22μF	1
C207, 805, 806	183-3363-22	Electrolytic-C 10V 33μF	3
C120, 121	183-4743-62	Electrolytic-C 50V 0.47μF	2
C165, 223, 303 304, 306, 311 403, 404, 406	183-4753-52	Electrolytic-C 35V 4.7μF	9
C174, 225, 226 227, 506, 522	183-4763-12	Electrolytic-C 6.3V 47μF	6
C423, 424, 904	183-4763-32	Electrolytic-C 16V 47μF	3
C307, 407	183-6843-62	Electrolytic-C 50V 0.68μF	2
C159, 503, 518	183-6863-22	Electrolytic-C 10V 68μF	3

◎ESCUTCHEON P.W.B

REF. NO.	PART NO.	DESCRIPTION	Q'TY
D711	001-0459-01	LED GL9HD44	1
IC701	051-1151-00	IC μPD7225G	1
R701	117-1841-10	Chip resistor 1/10W 180kΩ	3
R702~704	117-3321-10	Chip resistor 1/10W 3.3kΩ	3
C701, 702	178-1032-05	Ceramic chip-C 0.01μF	2

■FM TUNER PACK: 880-1418A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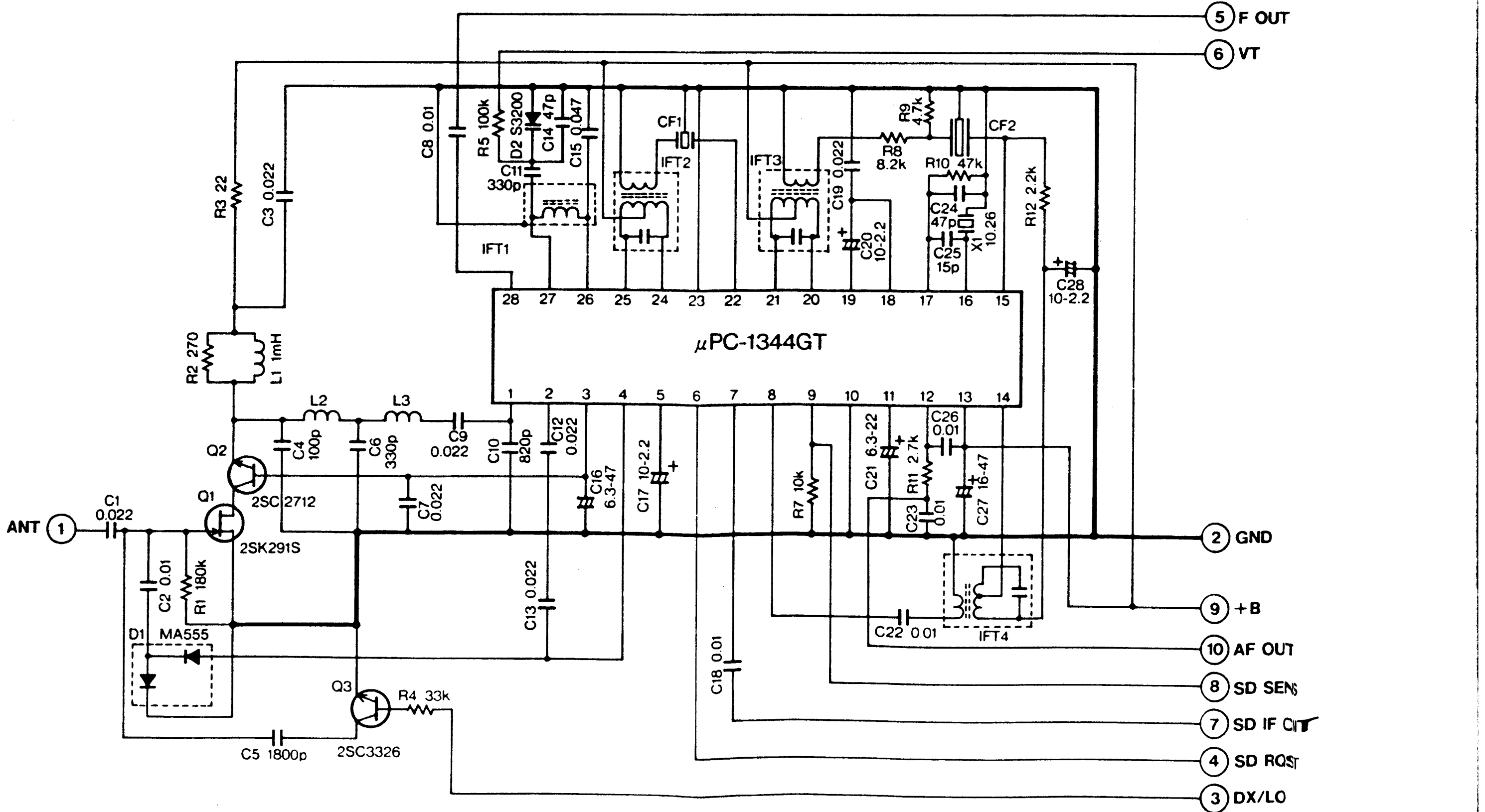
② ANT DUMP.
③ DX/LO
④ Vt
⑤ OSC OUT
⑥ Vcc
⑦ IF OUT
⑧ GND
⑨ N.L.A.
IC1 TA8116F
Q1 3SK195
Q2 2SC2714
Q3 2SC2715
Q4 2SA1162
Q5 2SK302
D1 KV1410
D2 KV1410
D3 MA111
D4 KV1410
L1
L2
L3
T1
T2
T3
CF1
CF2
TC1 10P
TC2 10P
C1 27P
C2 22P
C3 12PRH
C4 5P
C5 6P
C6 47P
C7 1000P
C8 0.01
C9 330P
C10 1000P
C11 10PTH
C12 12P
C13 0.01
C14 0.022
C15 0.01
C16 0.01
C17 0.01
C18 0.01
C19 0.01
C20 0.1
C21 0.01
C22 16-2.2
C23 16-1
C24 12PTH
C25 5P
C26 10P
C27 0.022
C28 0.01
R1 22K
R2 100K
R3 2.7K
R4 8.2K
R5 27K
R6 220K
R7 56
R8 10
R9 100K
R10 330
R11 100
R12 3.9K
R13 180
R14 150
R15 3.3K
R16 560
R17 47
R18 270
R19 10
R20 22K
R21 330
R22 330
R23 10
R24 33
R25 33

■MW/LW TUNER PACK: 880-1601A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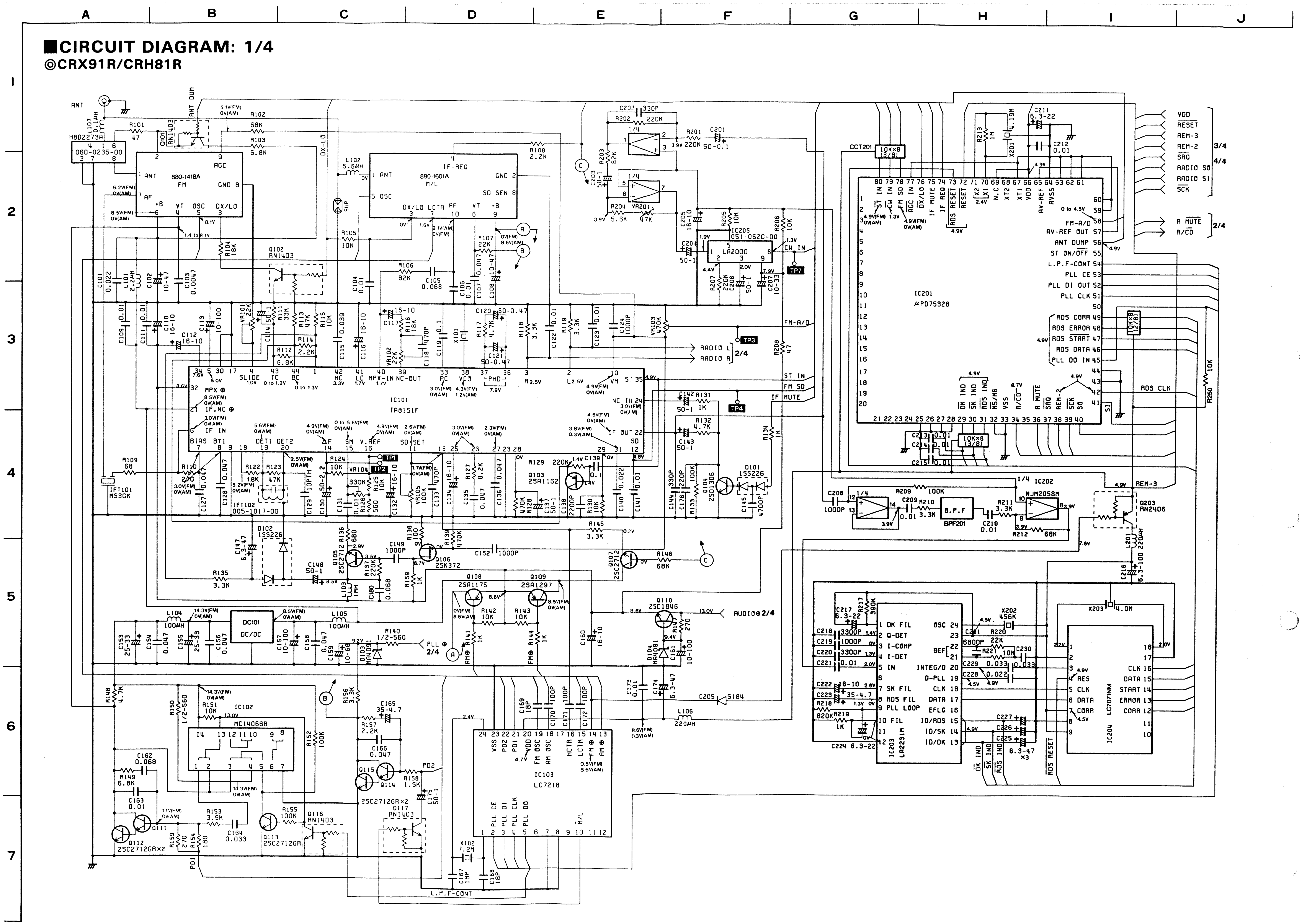
④ SD RQST
⑤ F OUT
⑥ VT
⑦ SD IF CNT
⑧ SD SENS
⑨ +B
⑩ AF OUT
μPC-1344GT
Q1 2SK291S
Q2 2SC2712
Q3 2SC3326
D1 MA555
D2 S3200
X1 10.26
CF1
CF2
IFT1
IFT2
IFT3
IFT4
L1 1mH
L2
L3
C1 0.022
C2 0.01
C3 0.022
C4 100p
C5 1800p
C6 330p
C7 0.022
C8 0.01
C9 0.022
C10 820p
C11 330p
C12 0.022
C13 0.022
C14 47p
C15 0.047
C16 6.3-47
C17 10-2.2
C18 0.01
C19 0.022
C20 10-2.2
C21 6.3-22
C22 0.01
C23 0.01
C24 47p
C25 15p
C26 0.01
C27 16-47
C28 10-2.2
R1 180k
R2 270
R3 22
R4 33k
R5 100k
R7 10k
R8 8.2k
R9 4.7k
R10 47k
R11 2.7k
R12 2.2k

■CIRCUIT DIAGRAM: 1/4

◎CRX91R/CRH81R


A
B
C
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J
1
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6
7
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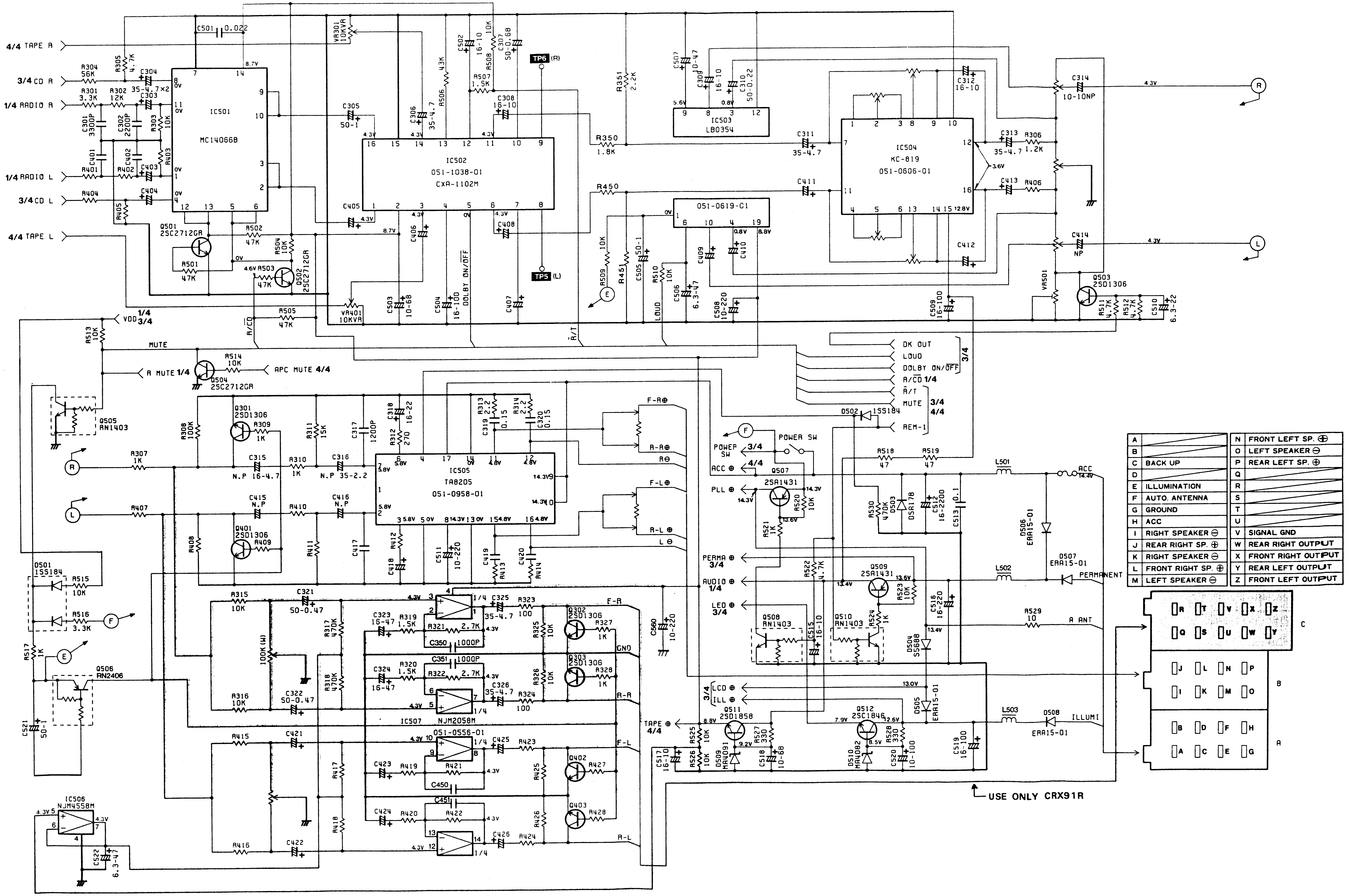
H8D2273A
060-0235-00
R101 47
Q101 RN1403
ANT DUM
5.1V(FM) 0V(AM)
R102 68K
R103 6.8K
880-1418A FM
AGC
ANT
GND
AF
+B
VT
OSC
DX/LO
6.2V(FM) 0V(AM)
8.5V(FM) 0V(AM)
8.1V
1.4 to 8.1V
R104 18K
Q102 RN1403
DX-LO
L102 5.6µH
STP
880-1601A M/L
IF-REQ
GND
SD SEN
OSC
DX/LO LCTR AF VT +B
R108 2.2K
R105 10K
R106 82K
C105 0.068
C104 0.01
C106 0.01
C107 0.047
C108 10-47
R107 22K
0V(FM) 8.6V(AM)
2.1V(AM) 0V(FM)
C202 330P
R202 220K
R201 220K
C201 50-0.1
R203 82K
C203 50-1
R204 5.6K
VR201 47K
3.9V
C205 16-10
R205 10K
IC205 051-0620-00
LA2000
R206 10K
C204 50-1
CW IN
TP7
R207 220K
C206 50-1
C207 10-33
C101 0.022
L101 2.2µH
C102 10-47
C103 0.0047
C109 0.01
C111 0.01
C110 16-10
C112 16-10
C113 10-100
VR101 22K
C114 50-1
R111 33K
R113 47K
R115 10K
R112 6.8K
R114 2.2K
C115 0.039
C116 16-10
C117 16-10
R116 18K
VR102 22K
C118 470P
C119 0.1
X101
C120 50-0.47
R117 4.7K
C121 50-0.47
R118 3.3K
C122 0.01
R119 3.3K
C123 0.01
C124 1000P
VR103 470K
FM-A/D
RADIO L
RADIO R
2/4
TP3
R208 47
IC101
TA8151F
MPX ⊕
IF.NC ⊕
IF IN
BIAS
BT1
SLIDE
TC
BC
HC
LC
MPX-IN
NC-OUT
PC
VCO
PHD
R
L
VM
S
NC IN
IF OUT
SD
DET1
DET2
ΔF
SM
V.REF
SD SET
ST IN
FM SD
IF MUTE
C142 50-1
R131 1K
TP4
R132 4.7K
C143 50-1
R134 1K
R109 68
IFT101 MS3GK
R110 220
C127 0.047
C128 0.047
R122 18K
R123 47K
IFT102 005-1017-00
10PTH
C129 0.047
C130 50-2.2
R124 10K
VR104 330K
TP1
TP2
C131 0.01
R126 560
R125 10K
C132 16-10
VR105 100K
C133 470P
C134 16-10
C135 0.047
R127 8.2K
C136 0.047
R129 220K
C139 0.1
Q103 2SA1162
R128 470K
C137 50-1
C138 2200P
R130 10K
C140 0.022
C141 0.01
C144 330P
C176 220P
R133 100K
Q104 2SD1306
D101 1SS226
C145 4700P
C147 6.3-47
D102 1SS226
R136 680
Q105 2SC2712
C148 50-1
R137 220K
L103 1mH
C180 0.068
C149 1000P
R138 100
Q106 2SK372
R159 1K
R139 470K
C152 1000P
R145 3.3K
Q107 2SC2712
R146 68K
R135 3.3K
Q108 2SA1175
Q109 2SA1297
R142 10K
R143 10K
R141 1K
R144 1K
AM⊕
FM⊕
L104 100µH
DC101 DC/DC
L105 100µH
C153 25-33
C154 0.047
C155 25-33
C156 0.047
C157 10-100
C158 0.047
C159 10-68
D103 MA4091
R140 1/2-560
PLL ⊕ 2/4
C160 16-10
Q110 2SC1846
R147 270
AUDIO⊕2/4
D104 MA4091
C161 10-100
C173 0.01
C174 6.3-47
C205
S184
L106 220µH
R148 4.7K
R150 1/2-560
R151 10K
IC102
MC14066B
R152 100K
C162 0.068
R149 6.8K
C163 0.01
R153 3.9K
C164 0.033
R155 100K
Q116 RN1403
Q111
Q112 2SC2712GR×2
R159 270
R154 180
Q113 2SC2712GR
PD1
R156 3.3K
C165 35-4.7
R157 2.2K
C166 0.047
Q115
Q114
R158 1.5K
PD2
C175 50-1
2SC2712GR×2
Q117 RN1403
C169 18P
C170 100P
C171 100P
C172 100P
IC103
LC7218
VSS
PD2
PD1
VDD
FM OSC
AM OSC
HCTR
LCTR
FM ⊕
AM ⊕
PLL CE
PLL DI
PLL CLK
PLL DO
M/L
X102 7.2M
C167 18P
C168 18P
L.P.F-CONT
CCT201
10K×8 (3/8)
R213 1M
X201 4.19M
C211 6.3-22
C212 0.01
IC201
µPD75328
ST IN
CW IN
FM SD
AGC IN
DX/LO
IF MUTE
IF REQ
RDS RESET
RESET
X2
X1
N.C
XT1
VDD
AV-REF
AVSS
FM-A/D
AV-REF OUT
ANT DUMP
ST ON/OFF
L.P.F-CONT
PLL CE
PLL DI
PLL CLK
RDS CORR
RDS ERROR
RDS START
RDS DATA
PLL DO IN
DK IND
SK IND
RDS IND
MS/M6
VSS
R/CD
R MUTE
SRQ
REM-2
SCK
SO
SI
10K×8 (2/8)
RDS CLK
R250 10K
10K×8 (3/8)
C213 0.01
C214 0.01
C215 0.01
VDD
RESET
REM-3
REM-2
SRQ
RADIO SO
RADIO SI
SCK
3/4
4/4
R MUTE
R/CD
2/4
C208 1000P
R209 100K
IC202 NJM2058M
C209 0.01
R210 3.3K
B.P.F
BPF201
C210 0.01
R211 3.3K
R212 68K
REM-3
Q203 RN2406
L201 220µH
C216 6.3-100
C217 6.3-22
R217 390K
IC203 LA2231M
DK FIL
Q-DET
I-COMP
I-DET
IN
SK FIL
RDS FIL
PLL LOOP
FIL
OSC
BEF
INTEG/D
D-PLL
CLK
DATA
EFLG
ID/RDS
ID/SK
ID/DK
C218 3300P
C219 1000P
C220 3300P
C221 0.01
C222 6-10
C223 35-4.7
R218
R219 1K
820K
C224 6.3-22
X202 456K
C201
R220 22K
6800P
R221 10K
C230 0.033
C229 0.033
C228 0.022
C227
C226
C225
6.3-47 ×3
DK IND
SK IND
RDS IND
RDS RESET
X203 4.0M
IC204 LC7071NM
RES
CLK
DATA
CORR
START
ERROR

■CIRCUIT DIAGRAM: 2/4

◎CRX91R/CRH81R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1/4 RADIO L
3/4 CD L
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CXA-1102M
IC503
LB0354
IC504
KC-819
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051-0619-01
IC505
TA8205
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Q401 2SD1306
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Q402
Q403
Q507
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Q508 RN1403
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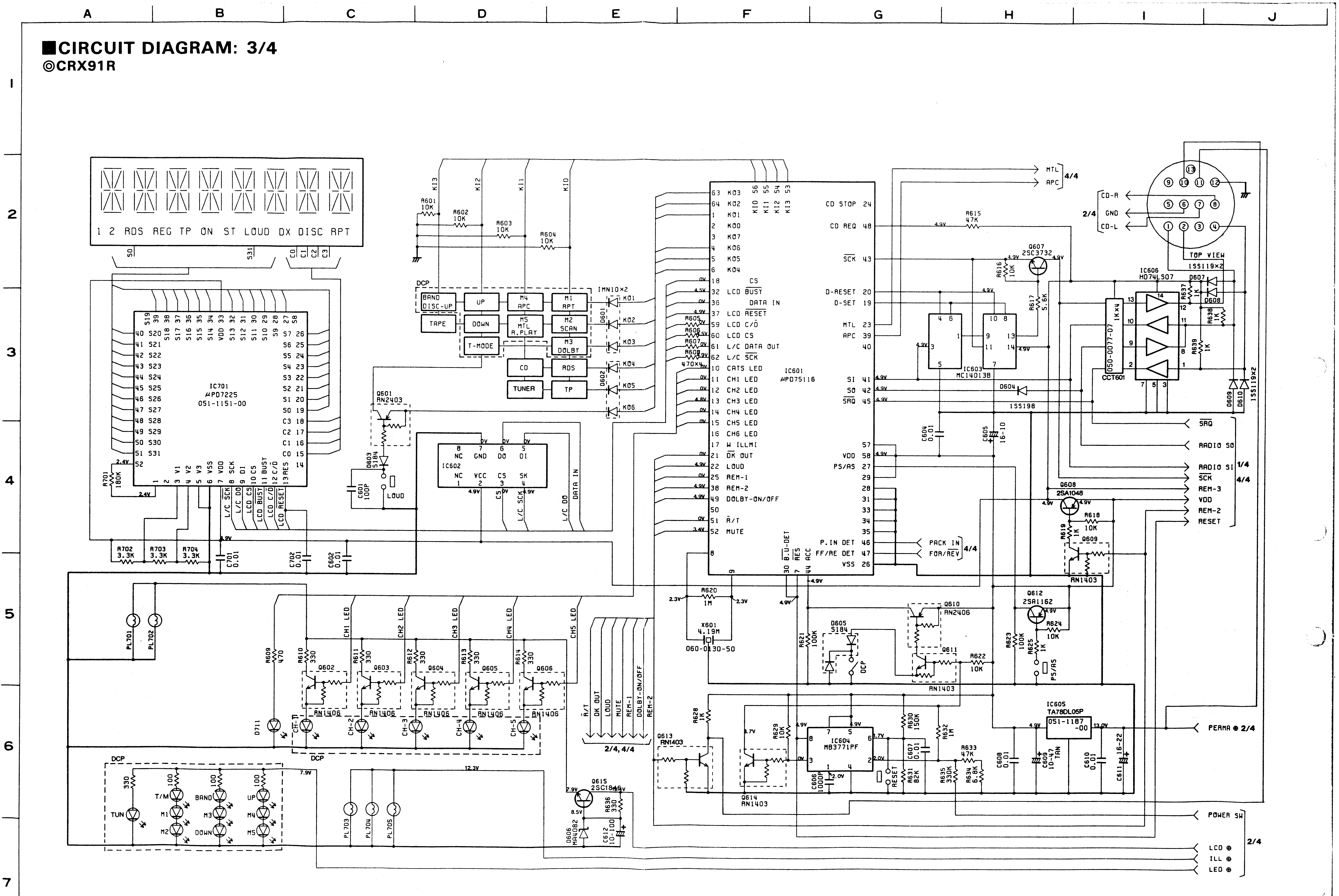
Q510 RN1403
Q511 2SD1858
Q512 2SC1846
VR301 10KVR
VR401 10KVR
VR501
TP6 (R)
TP5 (L)
VDD 1/4 3/4
MUTE
R MUTE 1/4
APC MUTE 4/4
DOLBY ON/OFF
LOUD
R/CD
R/T
DK OUT
LOUD
DOLBY ON/OFF
R/CD 1/4
R/T
MUTE 3/4 4/4
REM-1
3/4
POWER SW
POWER SW 3/4
ACC 4/4
PLL
PERMA 3/4
AUDIO 1/4
LED 3/4
LCD
ILL 3/4
TAPE 4/4
F-R⊕
R-R⊕
R⊖
F-L⊕
R-L⊕
L⊖
F-R
GND
R-R
F-L
R-L
L501
L502
L503
ACC
PERMANENT
R ANT
ILLUMI
D501 1SS184
D502 1SS184
D503 DSR178
D504 S5688
D505 ERA15-01
D506 ERA15-01
D507 ERA15-01
D508 ERA15-01
D509 MA4091
D510 MA4082
USE ONLY CRX91R
C
B
A

A		N	FRONT LEFT SP. ⊕
B		O	LEFT SPEAKER ⊖
C	BACK UP	P	REAR LEFT SP. ⊕
D		Q	
E	ILLUMINATION	R	
F	AUTO. ANTENNA	S	
G	GROUND	T	
H	ACC	U	
I	RIGHT SPEAKER ⊖	V	SIGNAL GND
J	REAR RIGHT SP. ⊕	W	REAR RIGHT OUTPUT
K	RIGHT SPEAKER ⊖	X	FRONT RIGHT OUTPUT
L	FRONT RIGHT SP. ⊕	Y	REAR LEFT OUTPUT
M	LEFT SPEAKER ⊖	Z	FRONT LEFT OUTPUT

■CIRCUIT DIAGRAM: 3/4

◎CRX91R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μPD7225
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R701 180K
R702 3.3K
R703 3.3K
R704 3.3K
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C702 0.01
C602 0.01
PL701
PL702
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BAND DISC-UP
TAPE
UP
DOWN
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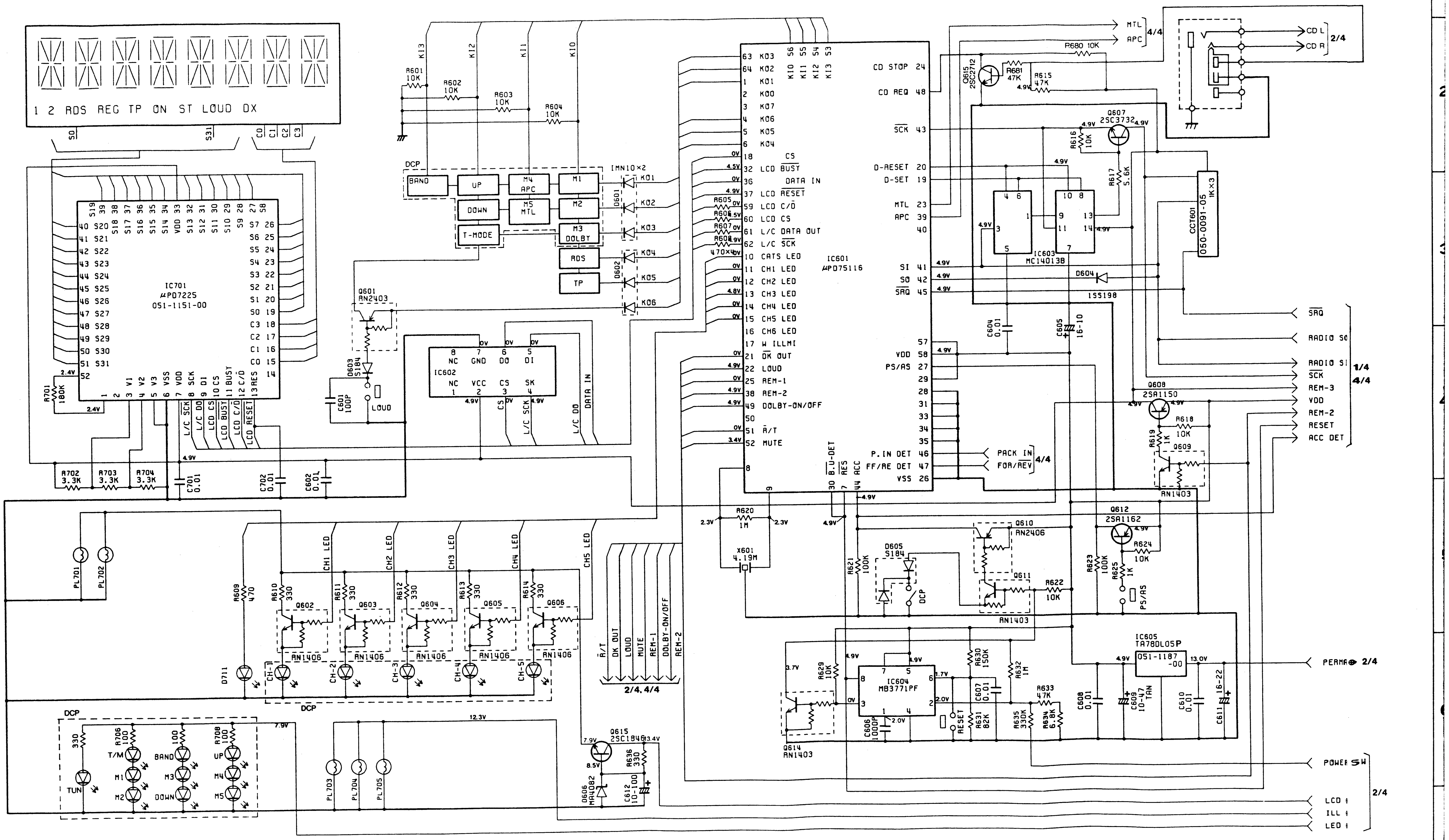
M4 APC
M5 MTL R.PLAY
M1 RPT
M2 SCAN
M3 DOLBY
CD
RDS
TUNER
TP
IMN10×2
D601
D602
K01
K02
K03
K04
K05
K06
R601 10K
R602 10K
R603 10K
R604 10K
Q601 RN2403
D603 S184
C601 100P
LOUD
IC602
NC
GND
DO
DI
VCC
CS
SK
L/C DO
DATA IN
IC601
μPD75116
CD STOP
CD REQ
SCK
D-RESET
D-SET
MTL
APC
SI
SO
SRQ
VDD
PS/AS
P.IN DET
FF/RE DET
VSS
LCD BUSY
DATA IN
LCD RESET
LCD C/D
LCD CS
L/C DATA OUT
L/C SCK
CATS LED
CH1 LED
CH2 LED
CH3 LED
CH4 LED
CH5 LED
CH6 LED
W ILLMI
DK OUT
LOUD
REM-1
REM-2
DOLBY-ON/OFF
R/T
MUTE
PACK IN
FOR/REV
4/4
MTL
APC
4/4
CD-R
GND
CD-L
2/4
TOP VIEW
1SS119×2
IC606
HD74LS07
Q607 2SC3732
Q607
Q608
R615 47K
R616 10K
R617 5.6K
R637 1K
R638 1K
R639 1K
CCT601
050-0077-07
1K×4
IC603
MC14013B
D604
1SS198
D609
D610
1SS119×2
C604 0.01
C605 16-10
SRQ
RADIO SO
RADIO SI
SCK
REM-3
VDD
REM-2
RESET
1/4
4/4
Q608 2SA1048
R618 10K
R619 1K
Q609
RN1403
Q612 2SA1162
R624 10K
R623 100K
R625 1K
PS/AS
R620 1M
X601 4.19M
060-0130-50
D605 S184
DCP
R621 100K
Q610 RN2406
Q611
R622 10K
RN1403
IC605
TA78DL05P
051-1187-00
PERMA ⊕ 2/4
C608 0.01
C609 10-47 TAN
C610 0.01
C611 16-22
IC604
MB3771PF
R628 1K
R629 10K
R630 150K
R631 82K
R632 1M
R633 47K
R634 6.8K
R635 330K
C606 1000P
C607 0.01
RESET
Q613 RN1403
Q614 RN1403
POWER SW
LCD ⊕
ILL ⊕
LED ⊕
2/4
R609 470
R610 330
R611 330
R612 330
R613 330
R614 330
Q602
Q603
Q604
Q605
Q606
RN1406
D711
CH-1
CH-2
CH-3
CH-4
CH-5
DCP
TUN
T/M
M1
M2
BAND
M3
DOWN
UP
M4
M5
PL703
PL704
PL705
Q615 2SC1846
R636 330
C612 10-100
D606 MTZJ8.2
R/T
DK OUT
LOUD
MUTE
REM-1
DOLBY-ON/OFF
REM-2
2/4, 4/4

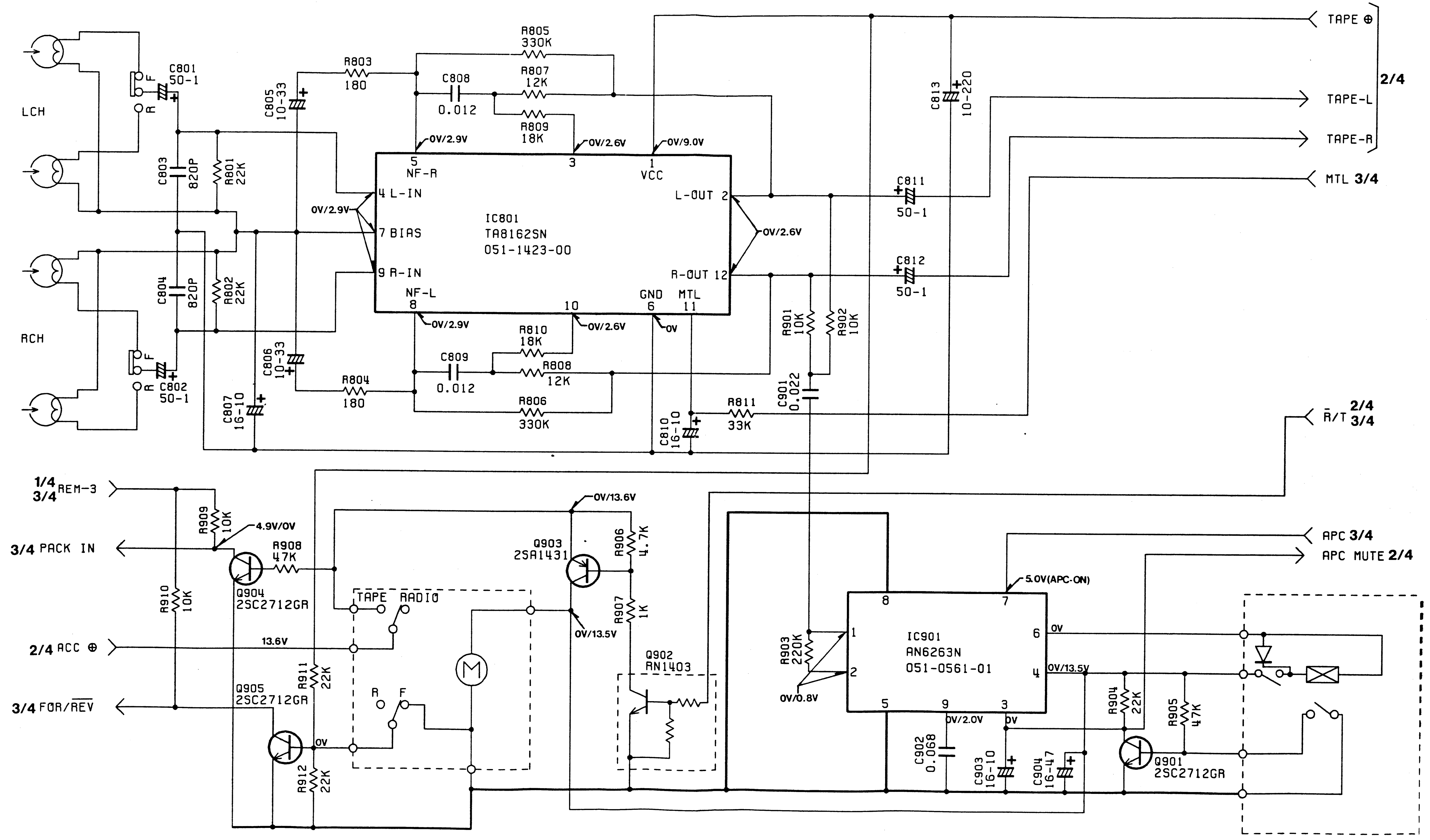
■CIRCUIT DIAGRAM: 3/4

◎CRH81R


A B C D E F G H I J
1 2 RDS REG TP ON ST LOUD DX
S0 S31 C0 C1 C2 C3
IC701
μPD7225
051-1151-00
R701 180K
R702 3.3K
R703 3.3K
R704 3.3K
C701 0.01
C702 0.01
C602 0.01
L/C SCK L/C DO LCD CS LCD BUSY LCD C/D LCD RESET
K13 K12 K11 K10
R601 10K
R602 10K
R603 10K
R604 10K
DCP
BAND UP M4 APC M1 DOWN M5 MTL M2 T-MODE M3 DOLBY RDS TP
IMN10×2
D601 D602
K01 K02 K03 K04 K05 K06
Q601 AN2403
D603 S184
C601 100P
LOUD
IC602
8 NC 7 GND 6 DO 5 DI
NC VCC CS SK
CS L/C SCK L/C DO DATA IN
IC601
μPD75116
63 K03 64 K02 1 K01 2 K00 3 K07 4 K06 5 K05 6 K04
18 CS
32 LCD BUSY
36 DATA IN
37 LCD RESET
59 LCD C/D
60 LCD CS
61 L/C DATA OUT
62 L/C SCK
10 CATS LED
11 CH1 LED
12 CH2 LED
13 CH3 LED
14 CH4 LED
15 CH5 LED
16 CH6 LED
17 W ILLMI
21 DK OUT
22 LOUD
25 REM-1
38 REM-2
49 DOLBY-ON/OFF
50
51 A/T
52 MUTE
K10 S6 K11 S5 K12 S4 K13 S3
CD STOP 24
CD REQ 48
SCK 43
D-RESET 20
D-SET 19
MTL 23
APC 39
40
SI 41
SO 42
SRQ 45
57
VDD 58
PS/AS 27
29 28 31 33 34 35
P.IN DET 46
FF/RE DET 47
VSS 26
30 B.U-DET 7 RES 44 ACC 9 8
R605 R606 R607 R608 470×4
MTL APC 4/4
R680 10K
Q615 2SC2712
R681 47K
R615 47K
Q607 2SC3732
R616 10K
R617 5.6K
IC603 MC14013B
D604 1SS198
C604 0.01
C605 16-10
CCT601 050-0091-05 1K×3
CD L CD R 2/4
SRQ
RADIO SO
RADIO SI
SCK
REM-3
VDD
REM-2
RESET
ACC DET
1/4 4/4
Q608 2SA1150
R618 10K
R619 1K
Q609 AN1403
PACK IN FOR/REV 4/4
R620 1M
X601 4.19M
Q612 2SA1162
R624 10K
R623 100K
R625 1K
PS/AS
Q610 AN2406
Q611
R622 10K
AN1403
D605 S184
R621 100K
DCP
PL701 PL702
R609 470
R610 330 R611 330 R612 330 R613 330 R614 330
Q602 Q603 Q604 Q605 Q606
AN1406
CH1 LED CH2 LED CH3 LED CH4 LED CH5 LED
D711 CH-1 CH-2 CH-3 CH-4 CH-5
A/T DK OUT LOUD MUTE REM-1 DOLBY-ON/OFF REM-2
2/4, 4/4
IC604 MB3771PF
R629 10K
R630 150K
R631 82K
R632 1M
R633 47K
R634 6.8K
R635 330K
C606 1000P
C607 0.01
RESET
Q614 AN1403
IC605 TA78DL05P
051-1187-00
C608 0.01
C609 10-47 TAN
C610 0.01
C611 16-22
PERMA 2/4
POWER SW
LCD ILL LED 2/4
330 R706 100 R708 100 100
T/M BAND UP M1 M3 M4 TUN M2 DOWN M5
PL703 PL704 PL705
Q615 2SC1846
R636 330
D606 MA4082
C612 10-100
12.3V 7.9V 8.5V 13.4V 13.0V 4.9V 2.4V 2.3V 0V

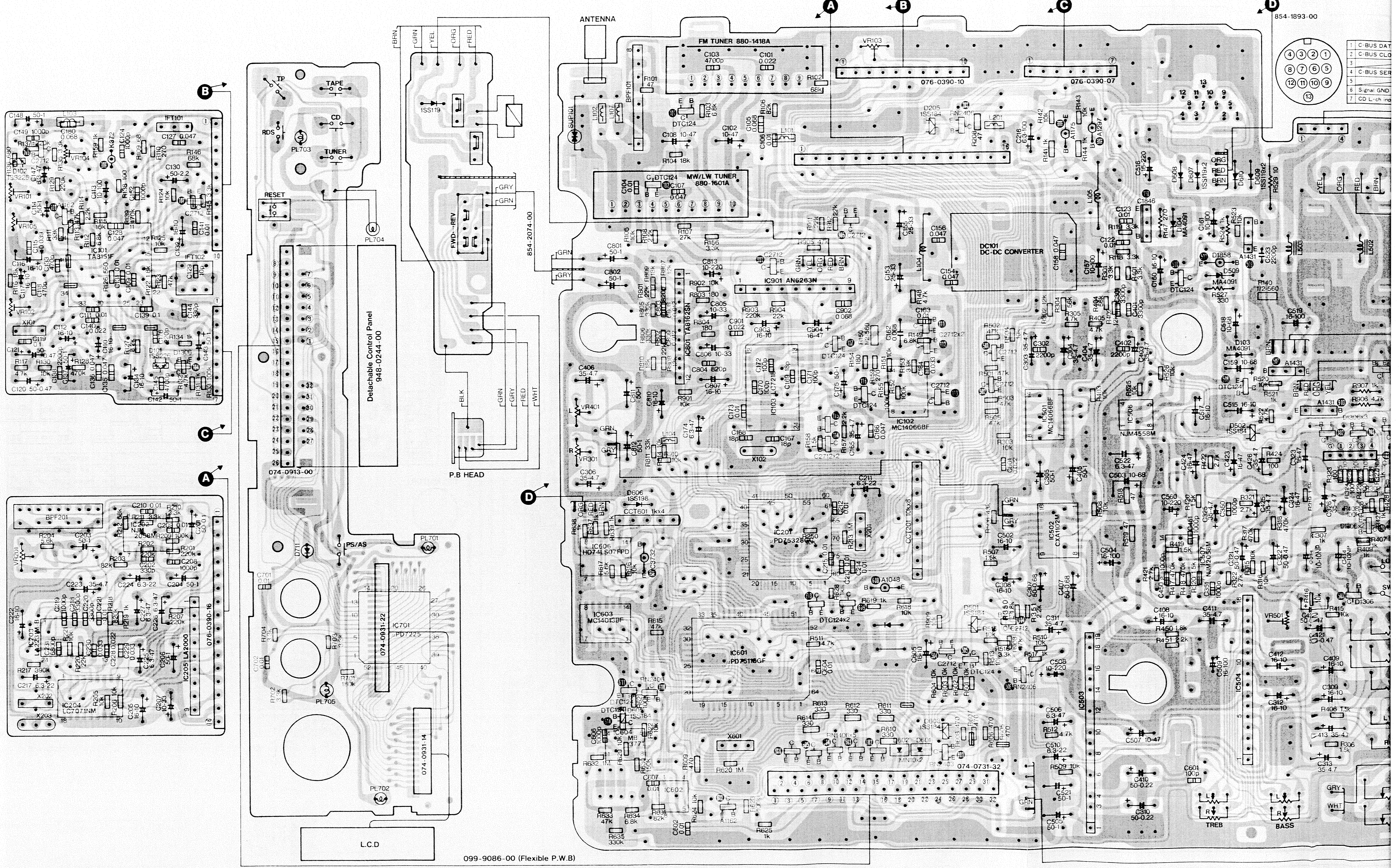
■CIRCUIT DIAGRAM: 4/4

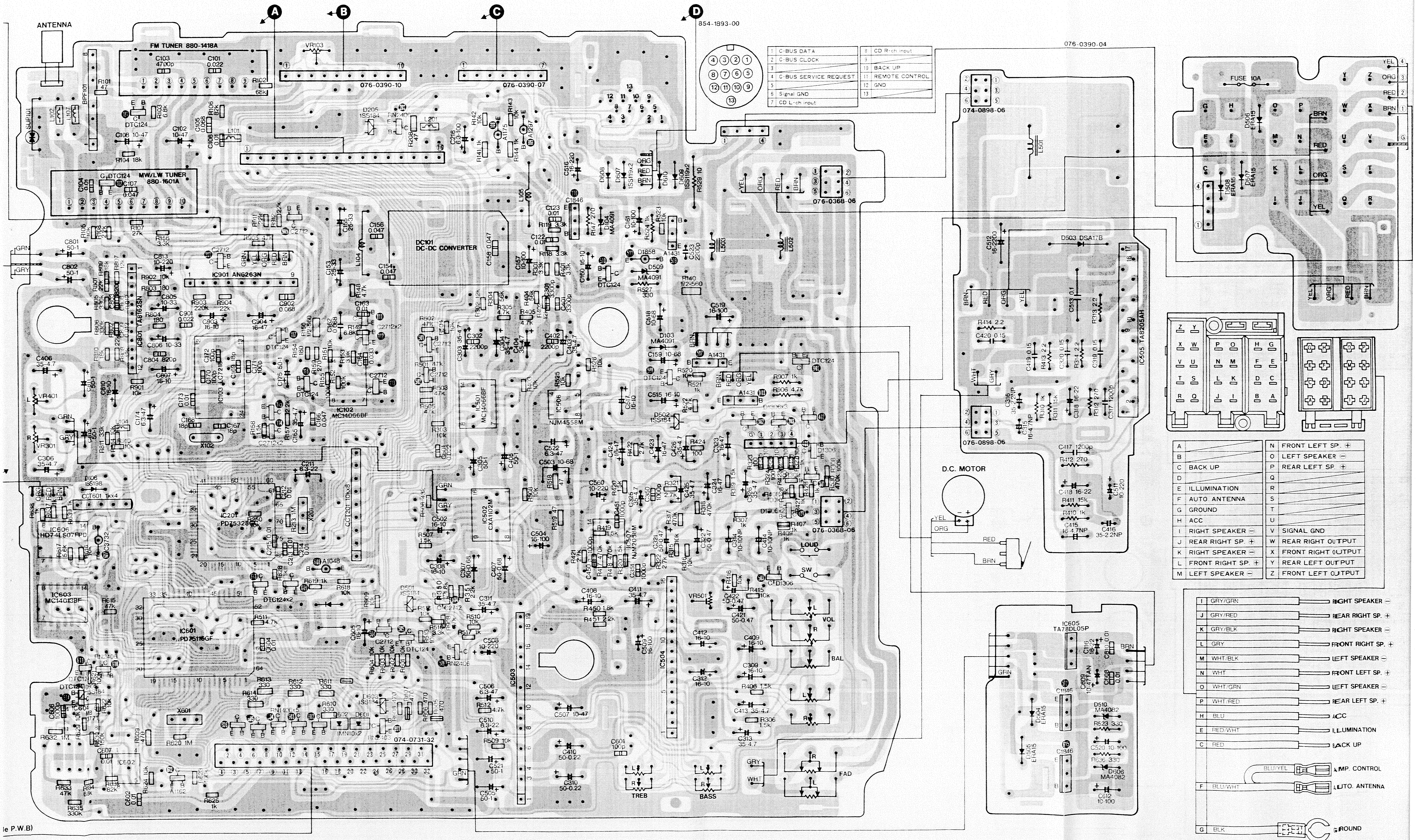
◎CRX91R/CRH81R


LCH
RCH
F
R
C801
50-1
C802
50-1
C803
820P
C804
820P
R801
22K
R802
22K
C805
10-33
C806
10-33
C807
16-10
R803
180
R804
180
C808
0.012
C809
0.012
R805
330K
R806
330K
R807
12K
R808
12K
R809
18K
R810
18K
0V/2.9V
0V/2.6V
0V/9.0V
5
NF-R
3
1
VCC
4 L-IN
7 BIAS
9 R-IN
IC801
TA8162SN
051-1423-00
L-OUT 2
R-OUT 12
NF-L
8
10
GND
6
MTL
11
0V
C810
16-10
R811
33K
C811
50-1
C812
50-1
C813
10-220
R901
10K
R902
10K
C901
0.022
TAPE ⊕
TAPE-L
TAPE-R
2/4
MTL 3/4
R̄/T 2/4 3/4
1/4 3/4 REM-3
3/4 PACK IN
2/4 ACC ⊕
3/4 FOR/REV
R909
10K
4.9V/0V
R908
47K
Q904
2SC2712GR
R910
10K
13.6V
R911
22K
R912
22K
Q905
2SC2712GR
0V
TAPE
RADIO
R
F
M
0V/13.6V
Q903
2SA1431
R906
4.7K
R907
1K
0V/13.5V
Q902
RN1403
APC 3/4
APC MUTE 2/4
5.0V(APC-ON)
R903
220K
0V/0.8V
8
7
1
2
5
9
3
6
4
IC901
AN6263N
051-0561-01
0V
0V/13.5V
0V/2.0V
0V
C902
0.068
C903
16-10
C904
16-47
R904
22K
R905
47K
Q901
2SC2712GR

■PRINTED WIRING BOARD:

◎CRX91R


ANTENNA
FM TUNER 880-1418A
MW/LW TUNER 880-1601A
DC101 DC-DC CONVERTER
IC901 AN6263N
IC801 TA8162SN
IC102 MC14066BF
IC101 TA3151F
IC201 μPD75328GC
IC601 μPD75116GF
IC603 MC14013BF
IC606 HD74LS07FPD
IC501 MC14066BF
IC502 CXA1102M
IC506 NJM4558M
IC205 LA2000
IC204 LC7071NM
IC701 μPD7225
076-0390-10
076-0390-07
076-0390-16
074-0731-32
854-1893-00
854-2074-00
Detachable Control Panel 948-0244-00
074-0913-00
074-0931-22
074-0931-14
P.B HEAD
FWD⇔REV
TAPE
CD
TUNER
RDS
TP
RESET
PS/AS
L.C.D
099-9086-00 (Flexible P.W.B)
TREB
BASS
A
B
C
D
C-BUS DAT
C-BUS CLO
C-BUS SER
Signal GND
CD L-ch inp


A
B
C
D
ANTENNA
FM TUNER 880-1418A
MW/LW TUNER 880-1601A
BPF101
SUP101
VR103
076-0390-10
076-0390-07
854-1893-00
076-0390-04
074-0898-06
076-0368-06
074-0731-32
DC101
DC-DC CONVERTER
IC901 AN6263N
IC801 TA8162SN
IC102 MC14066BF
IC501 MC14066BF
IC506 NJM4558M
IC201 μPD75328
IC502 CXA1102M
CCT201
IC601 μPD75116GF
IC603 MC14013BF
IC606 HD74LS07FPD
IC503
IC504
IC507 NJM2058M
IC505 TA8205AH
IC605 TA78DL05P
X102
X201
X601
D503 DSA17B
L501
L502
L503
VR401
VR301
VR501
VOL
BAL
TREB
BASS
FAD
LOUD
SW
D.C. MOTOR
FUSE 10A
YEL
ORG
RED
BRN
GRN
GRY
WHT
BLK
BLU
BLU/YEL
GRY/GRN
GRY/RED
GRY/BLK
WHT/BLK
WHT/GRN
WHT/RED
RED/WHT
BLU/WHT
RIGHT SPEAKER ⊖
REAR RIGHT SP. ⊕
RIGHT SPEAKER ⊖
FRONT RIGHT SP. ⊕
LEFT SPEAKER ⊖
FRONT LEFT SP. ⊕
LEFT SPEAKER ⊖
REAR LEFT SP. ⊕
ACC
ILLUMINATION
BACK UP
AMP. CONTROL
AUTO. ANTENNA
GROUND

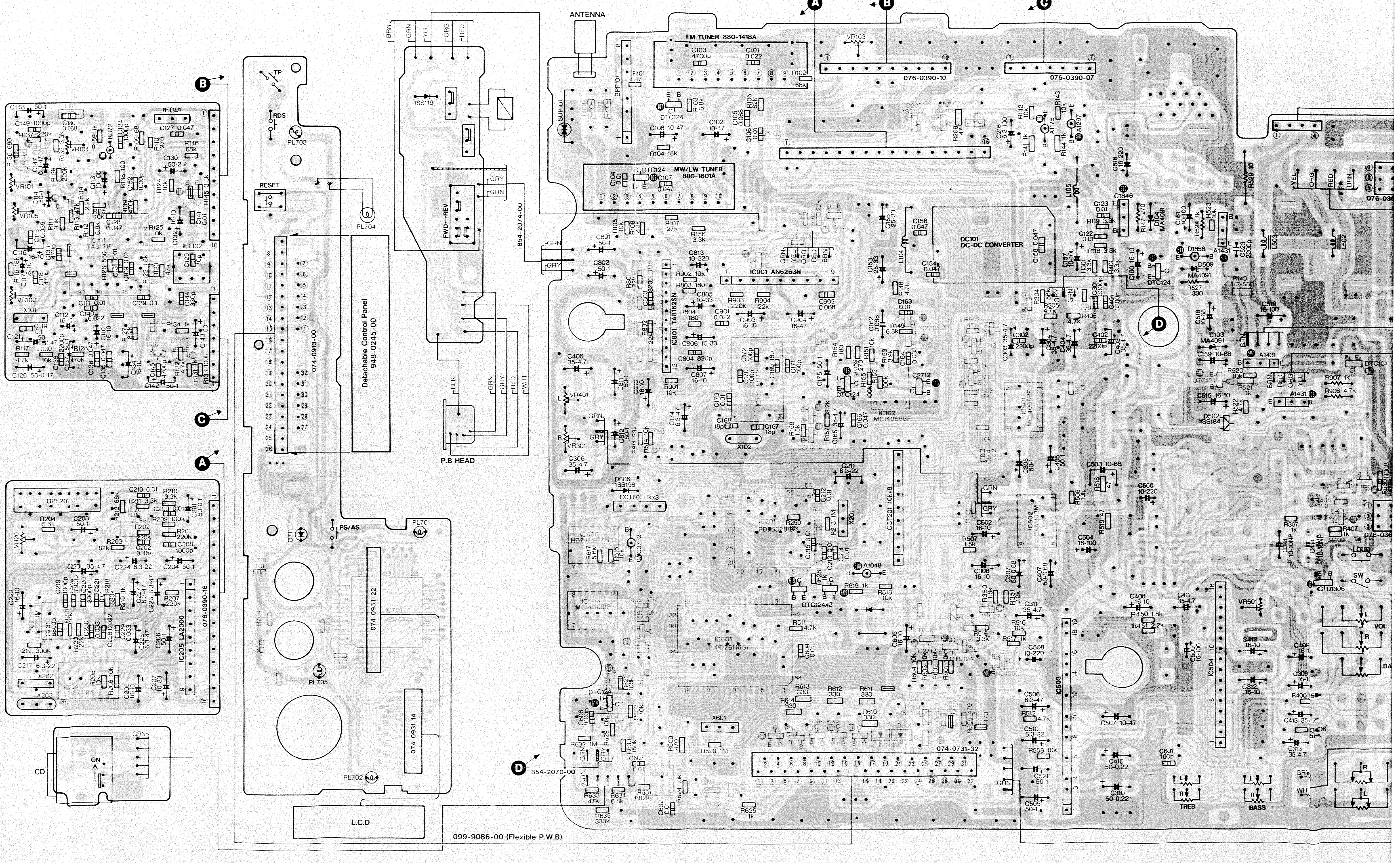
1	C-BUS DATA
2	C-BUS CLOCK
3	
4	C-BUS SERVICE REQUEST
5	
6	Signal GND
7	CD L-ch input
8	CD R-ch input
9	
10	BACK UP
11	REMOTE CONTROL
12	GND
13	

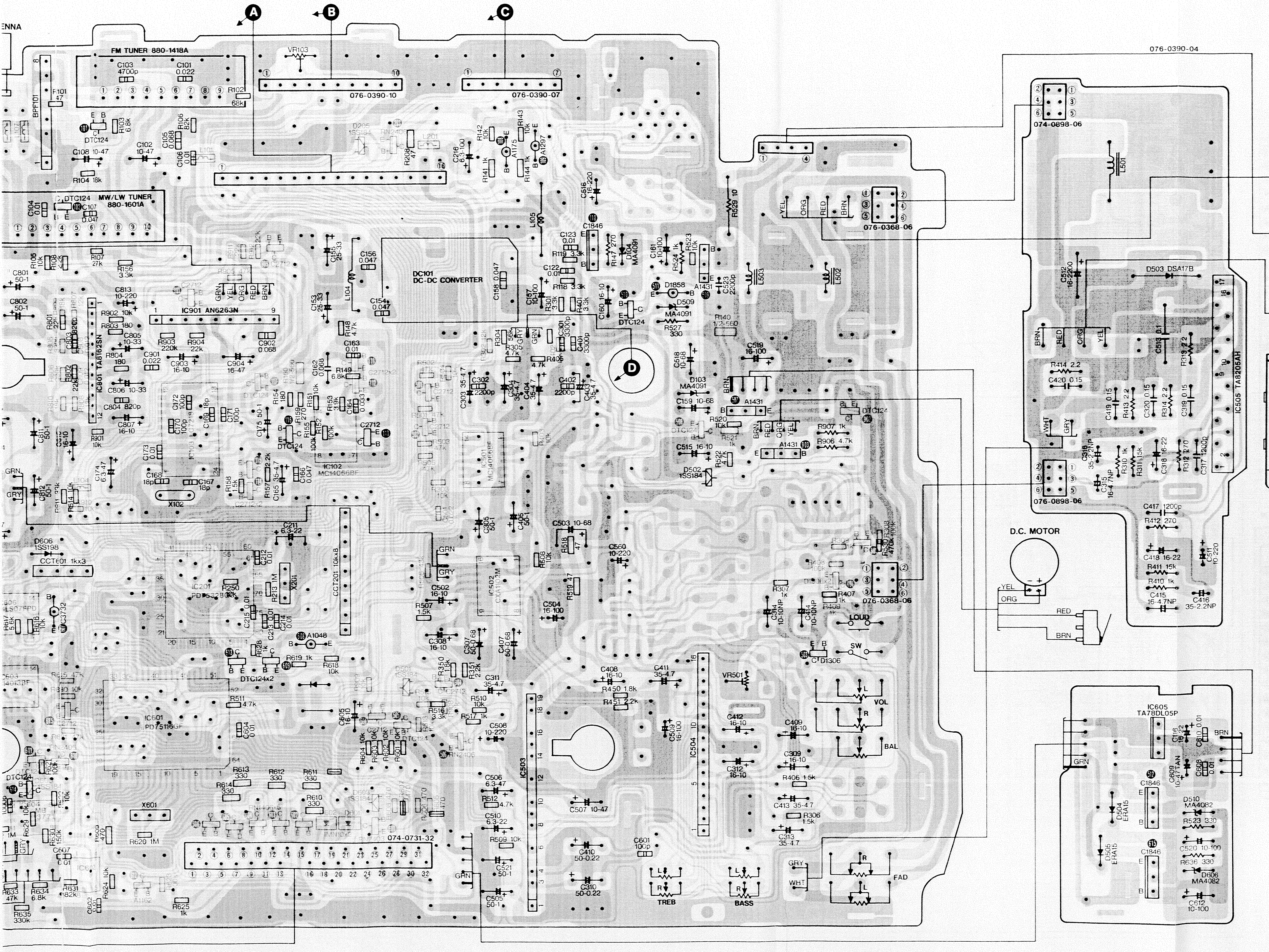
A	
B	
C	BACK UP
D	
E	ILLUMINATION
F	AUTO. ANTENNA
G	GROUND
H	ACC
I	RIGHT SPEAKER ⊖
J	REAR RIGHT SP. ⊕
K	RIGHT SPEAKER ⊖
L	FRONT RIGHT SP. ⊕
M	LEFT SPEAKER ⊖
N	FRONT LEFT SP. ⊕
O	LEFT SPEAKER ⊖
P	REAR LEFT SP. ⊕
Q	
R	
S	
T	
U	
V	SIGNAL GND
W	REAR RIGHT OUTPUT
X	FRONT RIGHT OUTPUT
Y	REAR LEFT OUTPUT
Z	FRONT LEFT OUTPUT

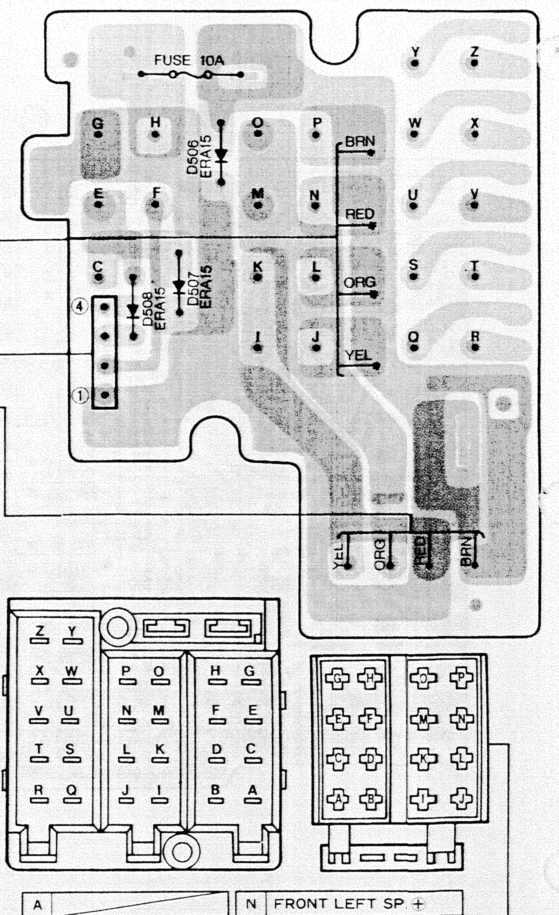
le P.W.B)

■PRINTED WIRING BOARD:

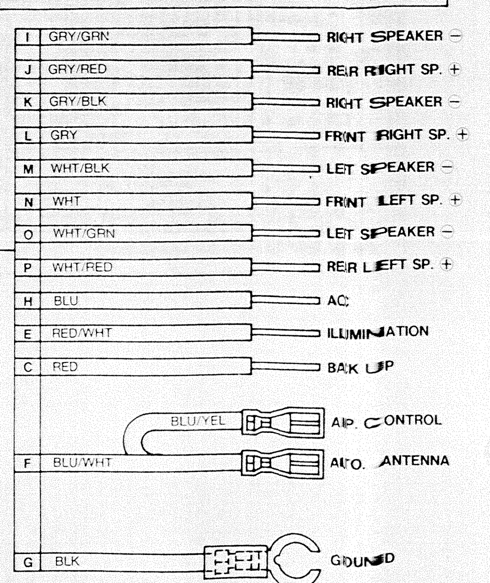
◎CRH81R


A
B
C
D
ANTENNA
FM TUNER 880-1418A
MW/LW TUNER 880-1601A
076-0390-10
076-0390-07
VR103
BPF101
DC101 DC-DC CONVERTER
IC901 AN6263N
IC801 TA8162SN
IC102 MC14066BF
X102
IFT101
IFT102
X101
BPF201
IC205 LA2000
076-0390-16
X202
X203
TP
RDS
PL703
RESET
PL704
074-0913-00
Detachable Control Panel 948-0245-00
1SS119
FWD↔REV
854-2074-00
P.B HEAD
BLK
GRN
GRY
RED
WHT
BRN
YEL
ORG
PS/AS
PL701
D711
074-0931-22
IC701 µPD7225
PL705
074-0931-14
PL702
L.C.D
099-9086-00 (Flexible P.W.B)
854-2070-00
CD
ON
CCT601 1kx3
CCT201 10kx8
X201
IC606 HD74LS07FPD
IC603 MC14013BF
IC601 µPD7516GF
X601
074-0731-32
IC502 LA4112M
IC501 MC14066BF
IC503
IC504
VR401
VR301
VR501
TREB
BASS
VOL
LOUD
SW
076-036


ENNA
A
B
C
D
FM TUNER 880-1418A
MW/LW TUNER 880-1601A
076-0390-10
076-0390-07
076-0390-04
074-0898-06
076-0368-06
074-0731-32
DC101 DC-DC CONVERTER
IC901 AN6263N
IC801 TA8162SN
IC102 MC14066BF
IC201 PD5328
IC601 PD7518GF
IC502 CXA1
IC501 MC14066BF
IC503
IC504
IC505 TA8205AH
IC605 TA78DL05P
CCT201 10k×8
CCT601 1k×3
X102
X201
X601
VR103
VR501
L501
L502
L503
D503 DSA17B
D.C. MOTOR
YEL
ORG
RED
BRN
GRN
GRY
WHT
LOUD
SW
VOL
BAL
TREB
BASS
FAD
FUSE 10A
DTC124
A1431
A1048
D1306
C1846
MA4091
MA4082
ERA15
1SS184
1SS198

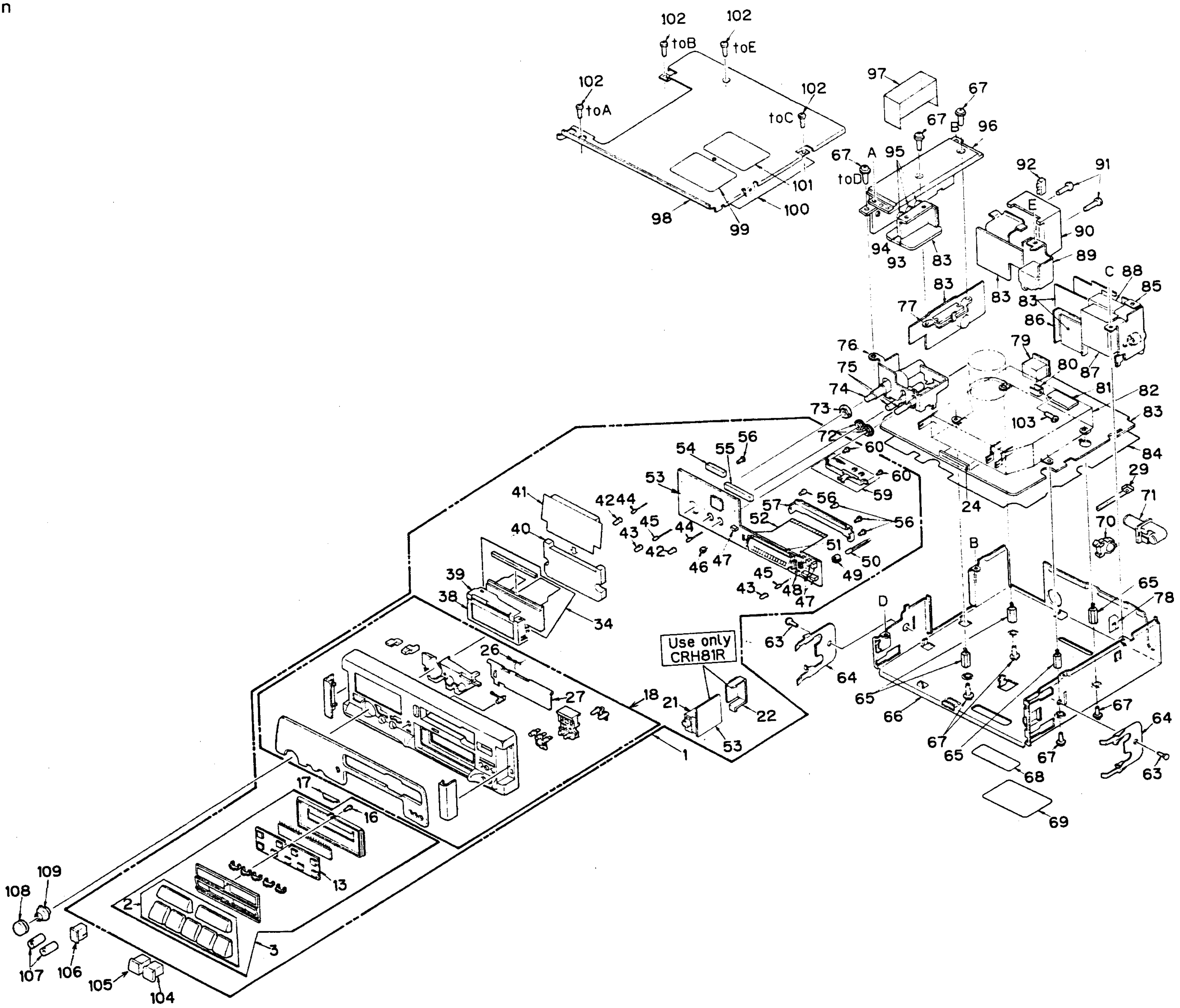

FUSE 10A
G
H
O
P
W
X
E
F
M
N
U
V
C
K
L
S
T
I
J
Q
R
Y
Z
BRN
RED
ORG
YEL
D506 ERA15
D508 ERA15
D507 ERA15
A
B

A			N	FRONT LEFT SP. +
B			O	LEFT SPEAKER −
C	BACK UP		P	REAR LEFT SP. +
D			Q	
E	ILLUMINATION		R	
F	AUTO. ANTENNA		S	
G	GROUND		T	
H	ACC		U	
I	RIGHT SPEAKER −		V	
J	REAR RIGHT SP. +		W	
K	RIGHT SPEAKER −		X	
L	FRONT RIGHT SP. +		Y	
M	LEFT SPEAKER −		Z	


I GRY/GRN RIGHT SPEAKER −
J GRY/RED REAR RIGHT SP. +
K GRY/BLK RIGHT SPEAKER −
L GRY FRONT RIGHT SP. +
M WHT/BLK LEFT SPEAKER −
N WHT FRONT LEFT SP. +
O WHT/GRN LEFT SPEAKER −
P WHT/RED REAR LEFT SP. +
H BLU ACC
E RED/WHT ILLUMINATION
C RED BACK UP
BLU/YEL AMP. CONTROL
F BLU/WHT AUTO. ANTENNA
G BLK GROUND

■EXPLODED VIEW · PARTS LIST:

◎Main section

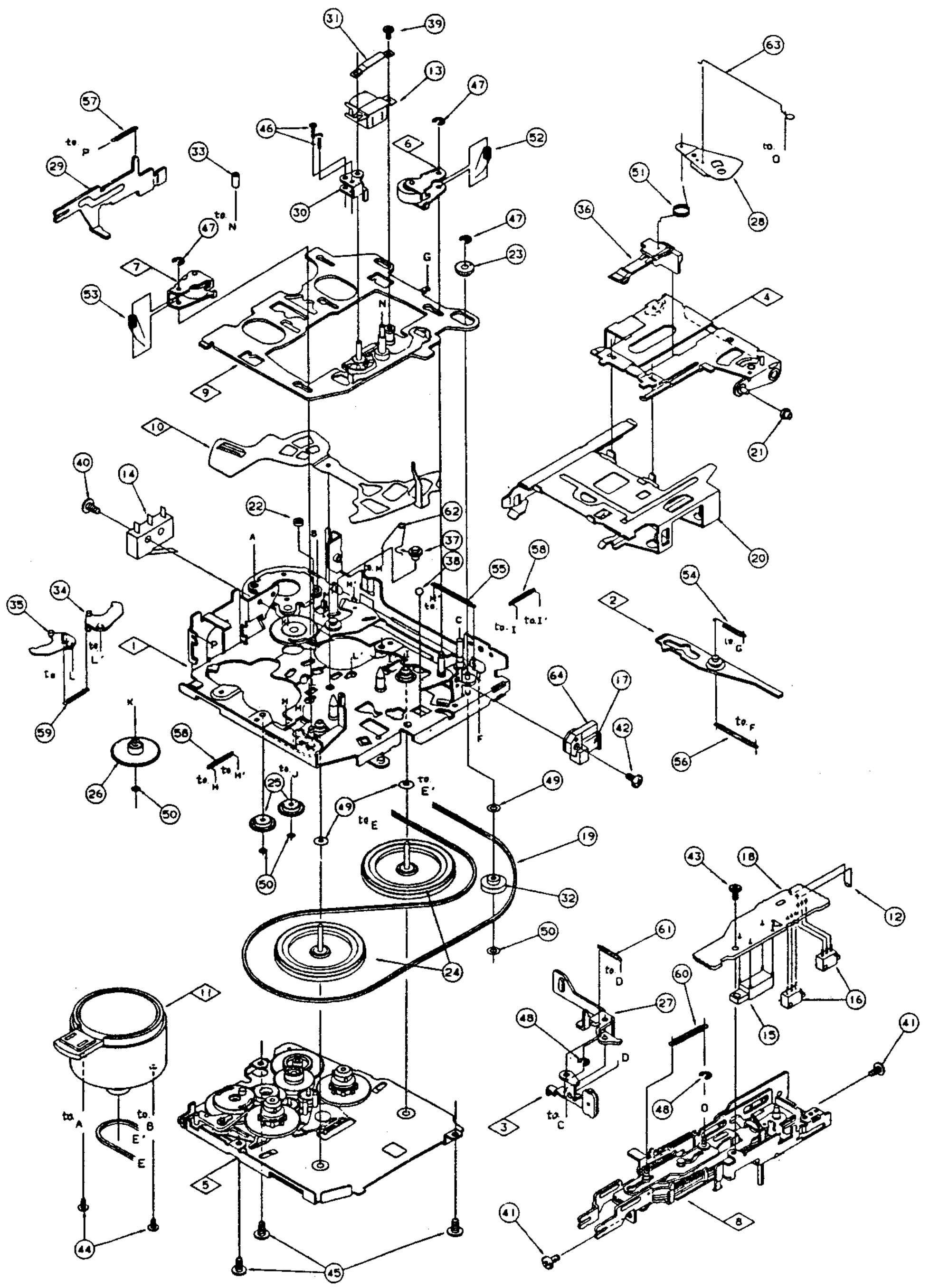


102
102
toB
toE
102
toA
102
toC
97
67
67
B
96
67
A
95
toD
101
100
98
99
92
91
E
90
89
94
93
83
C 88
85
83
77
83
83
86
76
79
75
80
87
74
81
82
73
83
72
103
56
54
55
60
84
53
60
29
59
71
41
4244
57
56
24
52
56
40
45
44
43
42
51
70
46
47
50
49
45
B
39
48
43
47
65
38
78
34
D
Use only
CRH81R
63
26
64
27
18
21
22
65
67
66
64
53
1
67
65
67
68
63
17
16
69
109
108
13
2
3
107
106
105
104

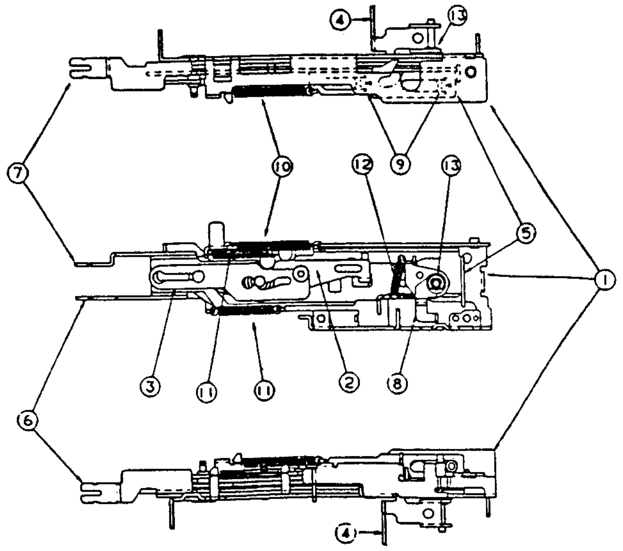
NO.	PART NO.	DESCRIPTION	Q'TY
1	940-1283A	ESCUTCHEON ASS'Y (CRX91R)	1
	940-1284A	ESCUTCHEON ASS'Y (CRH81R)	
2	947-0243-00	BUTTON ASSY (CRX91R)	1
	947-0250-00	BUTTON ASSY (CRH81R)	
3	948-0244-00	DCP ASS'Y (CRX91R)	1
	948-0245-00	DCP ASS'Y (CRH81R)	
13	379-0317-00	INDICATOR	1
16	716-1463-00	WAVE SCREW	1
17	382-2217-00	BUTTON	1
18	940-3129-01	SUB ESCUTCHEON-ASSY (CRX91R)	1
	940-3130-01	SUB ESCUTCHEON-ASSY (CRH81R)	
21	075-0306-00	CD JACK(CRH81R)	1
22	335-3493-00	CD JACK HOLDER (CRH81R)	1
24	074-0731-32	OUTLET SOCKET	1
26	750-2626-00	SPRING	1
27	320-0431-41	DUSTPROOF-CVR (CRX91R)	1
	320-0431-42	DUSTPROOF-CVR (CRH81R)	
29	335-0833-01	LEAD HOLDER	1
34	379-0017A	LCD-ASSY	1
38	330-9514-00	LCD HOLDER	1
39	347-3342-00	CONDUCTOR	1
40	335-3467-00	ILLUMI PLATE *LCD	1
41	347-3340-00	FILM *LCD	1
42	345-4441-58	LAMP CAP	2
43	345-4441-01	PL-CAP	2
44	017-0373-00	PILOTLAMP	2
45	017-0345-09	PILOTLAMP	2
46	001-0459-01	LED	1
47	013-3741-01	SWITCH (CRX91R)	6
		(CRH81R)	3
48	013-3916-00	SWITCH	1
49	345-3335-07	PL-HOLDER	1
50	017-0345-01	PILOTLAMP	1
51	074-0913-00	OUTLET SOCKET	1
52	099-9086-00	PWB (FLEX)	1
53	099-9217-00	PWB (CRX91R)	1
	099-9218-00	PWB (CRH81R)	
54	074-0931-14	OUTLET SOCKET 14P	1
55	074-0931-22	OUTLET SOCKET 22P	1
56	702-2005-81	TAP SCREW	5
57	330-9394-00	CONNECT HOLDER DCP	1
59	330-0002A	LOCK LEVER ASS'Y	1
60	716-0674-00	SCREW	2
63	714-3006-41	MACHINE SCREW	2
64	750-2649-01	SPRING	2
65	716-0877-00	STUD BOLT	4
66	311-1444-02	LOWER CASE (CRX91R)	1
	311-1444-03	LOWER CASE (CRH81R)	
67	716-0878-00	IT-SCREW	7
68	347-3315-00	SHADE	1
69	286-7516-00	SETPLATE (CRX91R)	1
69	286-7517-00	SETPLATE (CRH81R)	
70	335-3399-00	ANT HOLDER	1
71	092-0641-00	ANT-RECEPTACLE	1
72	722-0433-00	NUT	2
73	722-0370-00	NUT	1
74	012-4988-00	VARIABLE-R MAIN (CRX91R)	1
	012-4989-00	VARIABLE-R MAIN (CRH81R)	
75	012-4987-00	VARIABLE-R B/T	2
76	330-9390-00	VOL HOLDER	1
77	330-8976-01	IC SUPPORT	1
78	347-3341-00	FILM	1
79	074-0818-00	OUTLET SOCKET (CRX91R)	1
80	313-1278-00	HEAT SINK	1
81	060-0236-00	DC-DC CONVERTER	1
82	930-0578-86	TAPE-MECHANISM	1
83	099-9216-03	PWB	1
84	347-3332-00	INSULATOR	1
85	330-9392-00	ANT PLATE	1
86	347-2339-00	INSULATOR	1
87	880-1601A	BLOCK-ASSY (L/M)	1
88	880-1418A	BLOCK-ASSY (FM)	1
89	330-9391-00	BACK PLATE	1
90	074-0930-00	OUTLET SOCKET	1
91	714-2610-81	MACHINE SCREW	2
92	060-0057-56	AUTO-FUSE (10A)	1
93	330-9409-00	IC HOLDER	1
94	313-1423-00	HEAT SINK	1
95	714-2608-81	MACHINE SCREW	3
96	313-1398-07	HEAT SINK	1
97	347-3291-00	INSULATOR	1
98	303-0383-00	UPPER-COVER	1
99	285-1410-00	GUIDE LABEL (SERVICE)	1
100	330-9437-01	SHIELD PLATE	1
101	285-1411-00	GUIDE LABEL (HOT)	1
102	714-2606-81	MACHINE SCREW	4
103	714-3005-81	MACHINE SCREW	1
104	382-2336-00	BUTTON FF	1
105	382-2337-00	BUTTON REW	1
106	382-2335-00	BUTTON PRO	1
107	380-5135-00	KNOB B/T	2
108	380-5063-00	KNOB FAD	1
109	380-5062-00	KNOB MAIN	1

■EXPLODED VIEW・PARTS LIST:

◎Tape mechanism section **930-0578-86**

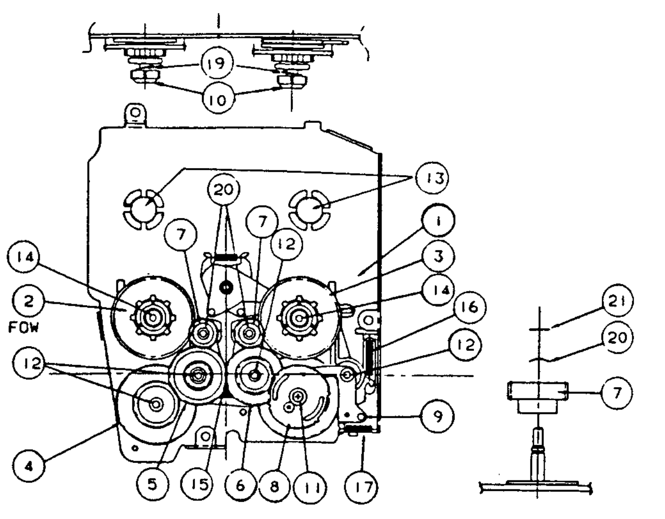


〈960-3862-12 Frame sub-A-RMS〉



REF.NO.	PART NO.	DESCRIPTION	Q'TY
1	960-3841-04	Frame ass'y RMS	1
2	960-3887-03	Select P-ass'y S	1
3	960-3845-03	Click P-ass'y	1
4	630-1931-03	Lock arm	1
5	630-1938-03	Eject plate RS	1
6	630-1942-06	FF lever RM	1
7	630-1947-06	REW lever RM	1
8	960-4058-04	SW plate ass'y	1
9	610-0296-01	Eject-P-roller	2
10	750-2549-01	Eject spring R	1
11	750-2550-02	FF spring RM	2
12	750-2556-01	SW plate spring	1
13	743-1500-20	E-ring	2

〈960-4209-00 Bottom sub ass'y〉



Ref. No.	Part No. (Order No.)	Description	Q'ty
1	960-4210-00	Bottom ass'y E	1
2	960-3854-04	Reel ass'y F	1
3	960-3855-06	Reel ass'y R	1
4	613-0088-01	Gear B	1
5	613-0089-02	Gear F	1
6	613-0090-02	Gear R	1
7	613-0091-01	Play idler gear	2
8	613-0093-03	Change gear	1
9	631-0546-02	Lock link	1
10	631-1967-00	Slide bush	2
11	716-0716-10	Screw	1
12	746-0761-00	Washer	6
13	746-0767-00	Washer	2
14	746-0813-00	Washer	2
15	750-2542-00	Idler-P-spring	1
16	750-2543-01	Sensing spring	1
17	750-2544-03	Lock-L-spring	1
18	750-2546-01	Cancel spring	1
19	750-2564-01	Slide spring	2
20	745-0678-03	Washer	2
21	746-0797-00	Washer	2

■PARTS LIST: ◎Tape mechanism section

Ref. No.	Part No. (Order No.)	Description	Q'ty
1	960-3834-03	Deck-P ass'y R	1
2	960-3837-04	Shift-P ass'y	1
3	960-3839-03	Plunger-L ass'y	1
4	960-3840-02	Guide arm ass'y	1
5	960-4209-00	Bottom sub-A-E	1
6	960-4230-00	Roller ass'y F	1
7	960-4231-00	Roller ass'y R	1
8	960-3862-10	Frame sub-A-RMS	1
9	960-4224-00	Head-P-ass'y RMD	1
10	960-3881-04	CH plate ass'y	1
11	SMA-121-100	Motor ass'y	1
12	001-0330-00	Diode	1
13	011-0310-01	Head	1
14	013-2690-02	Switch	1
15	013-3807-00	Switch	1
16	013-3808-11	Switch	2
17	960-3392-01	Coil ass'y	1
18	099-7851-01	PWB	1
19	602-0103-10	Belt	1
20	606-0083-09	Pack guide	1
21	610-0226-01	Roller	1
22	610-0293-01	Power roller	1
23	610-0294-01	Head-P-G-roller	1
24	611-0077-01	Flywheel	2
25	613-0095-01	FF idler gear	2
26	613-0087-10	Gear A	1
27	630-1930-02	OFF arm	1
28	630-1932-02	Swing arm	1
29	630-2290-00	Program lever	1
30	630-1956-02	Adjust link	1
31	630-1962-02	Head spring	1
32	604-0035-01	Tension pulley	1
33	631-0545-01	Eject roller	1
34	631-0550-02	Brake F	1
35	631-0551-02	Brake R	1
36	631-0552-03	Pack stopper	1
37	632-1886-02	Lock pin	1
38	632-1888-00	Ball	1
39	716-0816-00	Screw (M2x3)	1
40	714-2308-81	Machine screw (M2.3 × 8)	1
41	714-2604-81	Machine screw (M2.6 × 4)	2
42	714-2606-11	Machine screw (M2.6 × 6)	1
43	716-0790-00	Machine screw	1
44	716-0715-15	Screw	2
45	716-0717-10	Screw	3
46	716-0718-21	Screw	2
47	743-1500-20	E-ring	3
48	743-2000-20	E-ring	2
49	746-0624-00	Washer	3
50	746-0761-00	Washer	4
51	750-2361-01	Spring	1
52	750-2535-04	Roller spring F	1
53	750-2536-04	Roller spring R	1
54	750-2537-02	Over-P-spring	1
55	750-2538-01	Power-P-spring	1
56	750-2539-01	Shift-P-spring	1
57	750-2541-02	Program spring	1
58	750-2545-00	FF gear spring	2
59	750-2547-00	Brake spring	1
60	750-2554-03	Click-P-spring	1
61	750-2555-02	OFF arm spring	1
62	750-2568-00	Lock spring	1
63	750-2569-03	Eject rod RS	1
64	630-1479-02	Core	1

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